

Service Manual

Cassette Deck

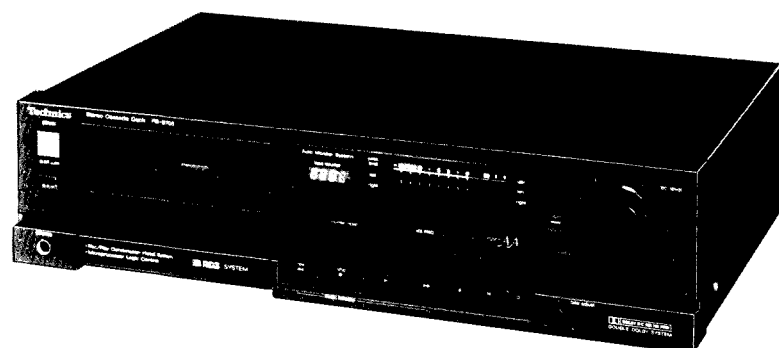
RS-B705

Closed Loop Dual Capstan
DOUBLE DOLBY SYSTEM

Color



(K)...Black Type
(S)...Silver Type



Color	Areas
(K) (S)	[E].....All European areas except United Kindom.
(K) (S)	[EK].....United Kingdom.
(K) (S)	[EG].....F.R. Germany.
(K) (S)	[EH].....Holland.
(K) (S)	[XA].....Asia, Latin America, Middle Near East, Africa and Oceania.
(K) (S)	[XL].....Australia.
(K) (S)	[XB].....Saudi Arabia.

SPECIFICATIONS

Deck system	Stereo cassette deck
Track system	4-track, 2-channel
Heads	
REC/PLAY	Combination head
Erasing	Double-gap ferrite head
Motors	
Capstan	Electronically controlled DC motor
Reel table drive	Electronically controlled DC motor
Recording system	AC bias
Bias frequency	85 kHz
Erasing system	AC erase
Tape speed	4.8 cm/sec. (1-7/8 ips)
Frequency response	
METAL	20 Hz~21 kHz (±15 dB) 30 Hz~20 kHz (DIN)
CrO ₂	20 Hz~20 kHz (±15 dB) 30 Hz~19 kHz (DIN)
NORMAL	20 Hz~19 kHz (±15 dB) 30 Hz~18 kHz (DIN)
S/N (signal level = max recording level, CrO ₂ type tape)	
Dolby C NR on	75 dB (CCIR)
Dolby B NR on	67 dB (CCIR)
NR off	57 dB (A weighted)
Wow and flutter	0.05% (WRMS) ±0.18% (DIN)
Fast Forward and Rewind Time	Approx. 95 seconds with C-60 cassette tape

Input sensitivity and impedance

LINE 60 mV/47 kΩ

Output voltage and impedance

LINE 400 mV/2.2 kΩ

HEADPHONES 80 mV/8 Ω

■ GENERAL

Power consumption 23W

Power supply

For United Kingdom and Australia

AC 50 Hz/60 Hz, 240V

For continental Europe

AC 50 Hz/60 Hz, 220V

For others

AC 50 Hz/60 Hz, 110V/127V/220V/240V

Dimensions (W×H×D)

430 × 285 × 109.5 mm

(16-15/16" × 4-5/16" × 11-7/32")

Weight

4.4 kg (9.7 lb.)

Note:

Specifications are subject to change without notice.

Weight and dimensions are approximate.

* HX Pro headroom extension originated by Bang Olufsen and manufactured under license from Dolby Laboratories Licensing Corporation.

"DOLBY", the double-D symbol, and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

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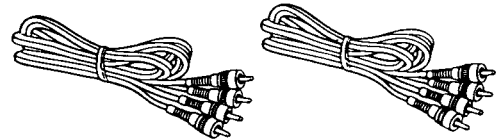
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ACCESSORIES

- AC power supply cord...1
(SFDAC05E03—[E, EG, EH]
SFDAC05G02—[EK]
SJA168-1—[XA]
SJA183—[XB]
SJA173—[XL])

- AC plug...1 (SJP9215—[XA, XB])

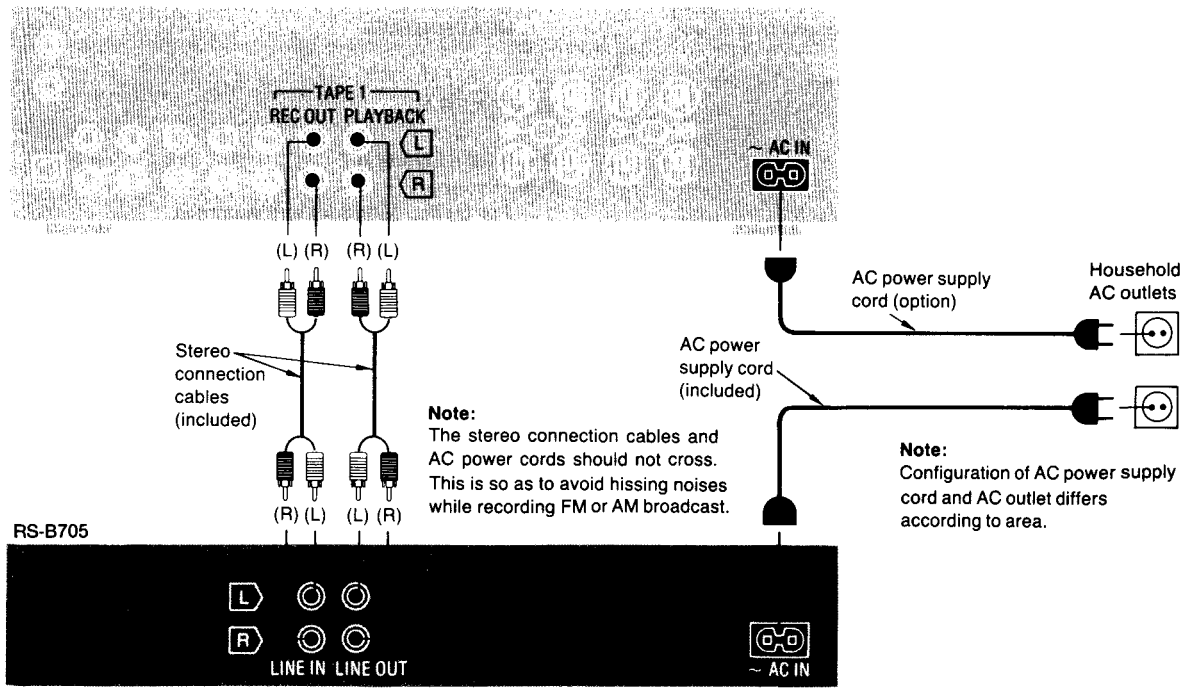
- Stereo connection...2 (SJP2264)



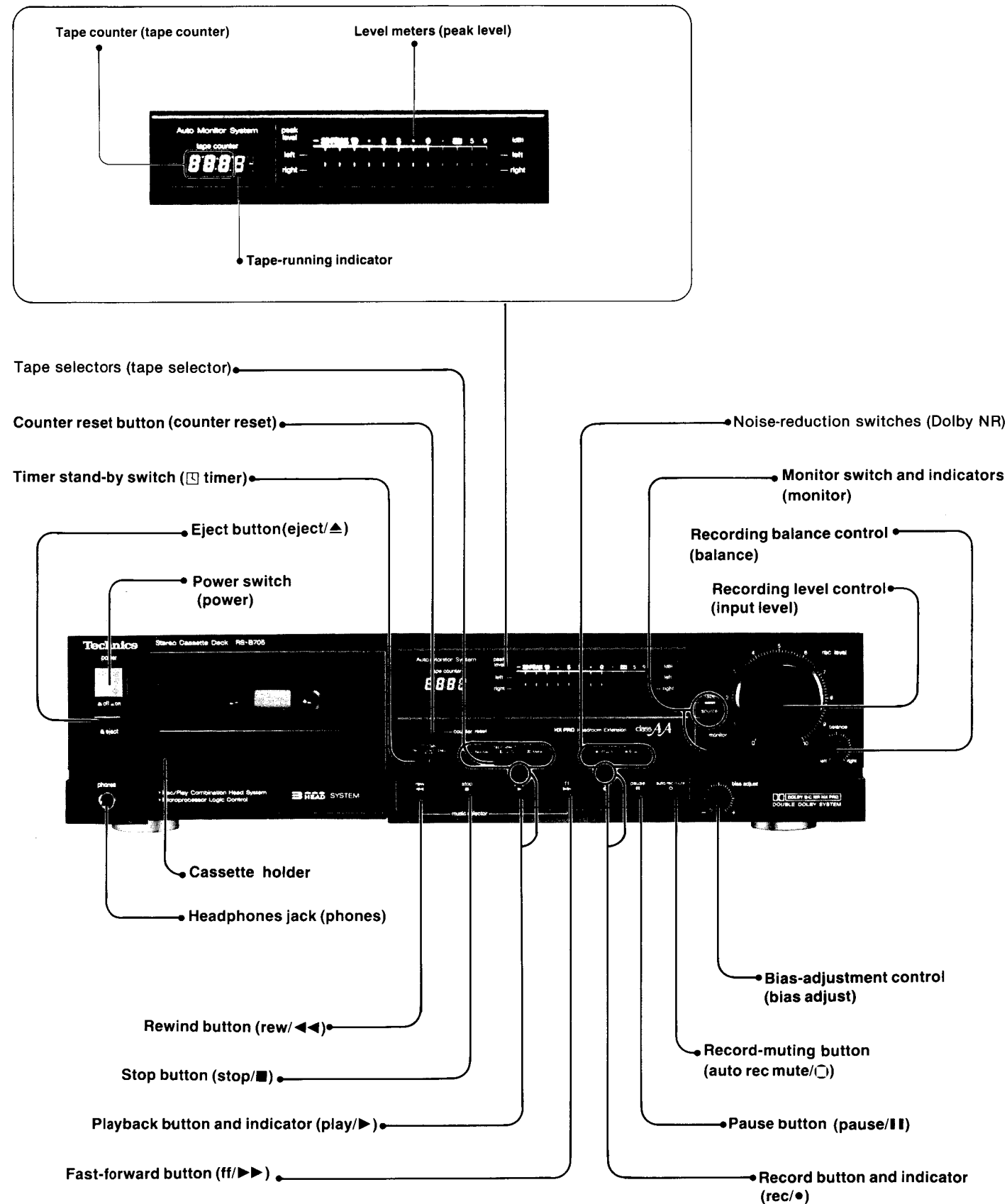
LOCATION OF CONTROLS

Rear Panel

Stereo amplifier (option)



Front Panel



TECHNICAL GUIDES

Dolby HX Pro-Head Room Extension System

To record good quality sound, it is necessary to give bias current to the head.

The bias current has characteristics as follows:

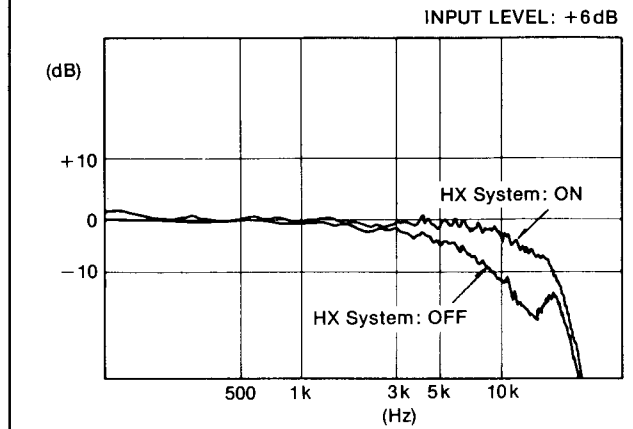
- Increasing the bias current reduces the distortion in low-frequency range but lowers the recording level in high-frequency range.
- Decreasing the bias current improves the recording level in high-frequency range but increases the distortion in low-frequency range.

In the case of a common deck, a specific level of bias current is determined according to the characteristics of recording head. Therefore, bias current cannot be applied to the head according to the frequency levels of music signal.

In order to solve such problems, this unit employs "Dolby HX-Pro". It picks up the high frequency of music source changing at all times, and controls the bias current level according to the changing frequency. It serves to make the bias current level then most suited for the music source.

This system always operates in recording mode irrespective of the noise reduction system, but the dynamic range in record/playback can be further increased by using this system in combination with a noise reduction system. Particularly, combination with the dbx NR system mounted in this unit will double the MOL (Maximum Output Level) in high frequency range, which is suited for the record/playback of digital source as in CD.

Dolby HX Pro System (NORMAL)



Bias Control Function

There are sometimes differences in playback output level even in case of same recording level or in sound quality even in case of same recording source.

This is because the characteristics of the cassette tape used are different with the makers and brands.

To solve this problem, this unit is furnished with bias control knob.

These knobs can be used to adjust the sound volume and quality while comparing the music signal (original sounds of record and tuner) and recorded signal (sound recorded on tape).

The comparison by hearing can be done by only one monitor switch because this unit is of 3-head type with record, playback and erase heads.

• Bias control knob

Used to correct the high-frequency sound quality of music signal and recorded signal.

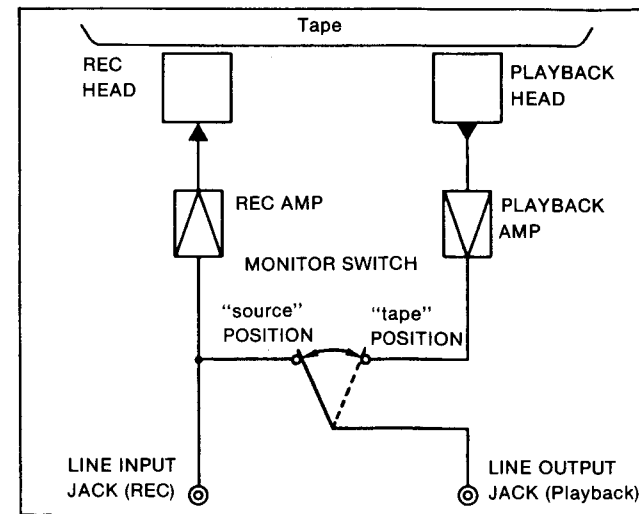
In this way, the record characteristics will not be distorted by tape, and the characteristics can be kept nearly uniform.

Monitor Switch

In order to avoid faulty recording such as low sound level or distortion, it is very important to monitor the state of recording.

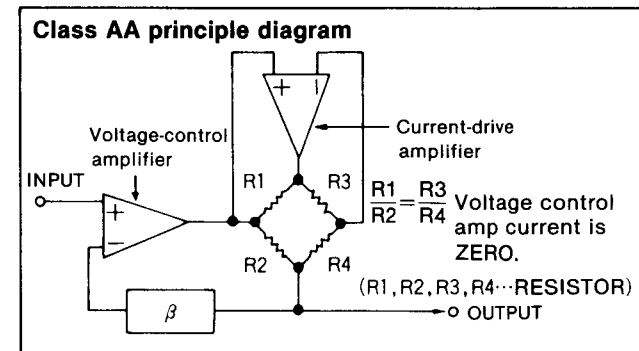
In the case of a common deck (2-head type), the sound that can be monitored during recording is always the sound before recording. So, when checking the state of actual recording, you have to rewind the tape and play it back.

This unit is of 3-head type, and the record head is independent of the playback head. Also, the sound before recording can be compared with the recorded sound by use of the monitor switch, therefore the state of recording can be easily checked.



<class AA> Circuit Recording Equalizer Amp

Recording equalizer amp is an amplifier to supply recording current to the head. Usually, loads such as recording head and bias trap circuit (bias current control circuit) are added to the amplifier. Therefore, the current phase and voltage phase are fluctuated causing the recording signal to be distorted. This unit employs "class AA" amp in which two types of amplifier circuits (voltage control amp and current supply amp) different in amplifying system. This recording equalizer amplifier is not influenced by the fluctuation of current phase or voltage phase as mentioned above, and is excellent in waveform response.



Operation Principles of Noise Reduction System

● Dolby NR B type, C type

The level of hiss noise generated during playback is constant.

So, it is more offensive to the ear when the music signal level is lower.

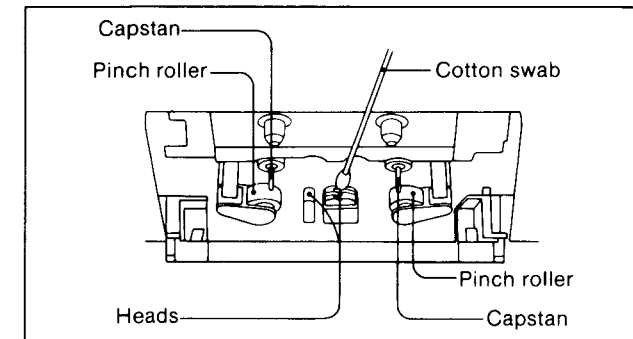
Accordingly, raising the signal level during recording and lowering the level during playback will result in reduction of noise generated by the tape. Dolby NR B type does it in high frequency range, and C type, in high and medium frequency ranges.

Head care

To assure sound quality for recording and playback, be sure to clean the heads after approximately every 10 hours of use.

- 1) Press the power switch to switch off the electrical power supply of the cassette tape deck.
- 2) Press the eject button to open the cassette holder.
- 3) Clean the heads, pinch roller and the capstan shaft with a cotton swab (or with a soft, lint-free cloth) slightly moistened with alcohol.

Do not use any solution other than alcohol for head cleaning.



Head demagnetization

In order to maintain good sound quality during recording and playback, it is recommended that the head assembly be demagnetized when distortion or poor sound quality persist after cleaning the heads.

If the head assembly becomes magnetized, it could create noise in the recordings, loss of high-frequency response or erasure of valuable recordings. Several types of head demagnetizers are available and may be purchased separately at local electronics supply stores. Follow the instructions that are supplied with the device.

- Do not bring any type of metal objects or tools such as magnetic screwdrivers in contact with the head assembly.

Maintenance of external surfaces

To clean this unit, use a soft, dry cloth.

If the surfaces are extremely dirty, use a soft cloth, dipped into a soap-and-water solution or a weak detergent solution.

Wring the cloth well before wiping the unit.

Wipe once again with a soft, dry cloth.

Never use alcohol, paint thinner, benzene, nor a chemically treated cloth to clean this unit.

Such chemicals may damage the finish of your unit.

DISASSEMBLY INSTRUCTIONS

"ATTENTION SERVICER"

Some chassis components may have sharp edges. Be careful when disassembling and servicing.

Ref. No. 1	How to remove the cabinet	Ref. No. 3	How to remove the FL meter P.C.B.
Procedure 1	• Remove the 5 screws.	Procedure 1→3	• Remove the 4 screws (1~4), and then remove the angle. • Pull out the input level control knob and the balance control knob. • Remove the 2 screws (5, 6). • Push the 2 tabs.
Ref. No. 2	How to remove the main P.C.B. and the power P.C.B.		
Procedure 1→2	• Remove the 5 screws (1~5). • Remove the main P.C.B. • Remove the connection rod. • Remove the 5 screws (6~10). • Remove the power P.C.B.		

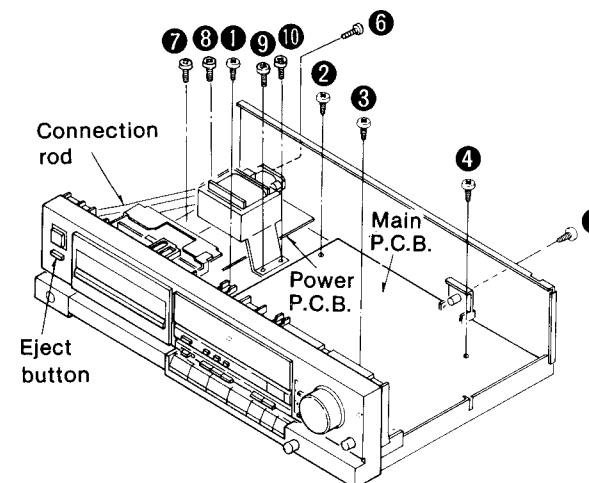


Fig. 1

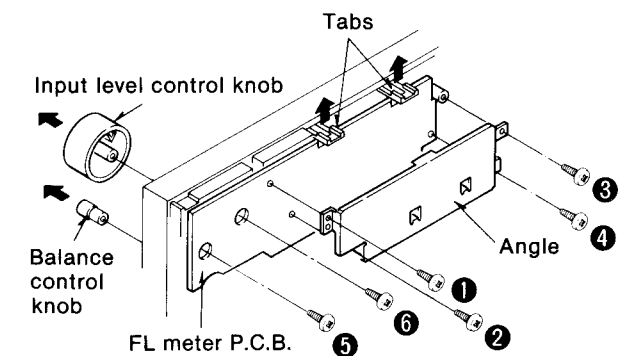


Fig. 2

Dolby B-C NR-Equipped Stereo Cassette Deck

DEUTSCH

Verwenden Sie bitte diese Broschüre Zusammen mit der Service-Anleitung für das Modell Nr. RS-B705

■ MESSUNGEN UND EINSTELL METHODEN

Meßinstrumente

- Elektronisches Voltmeter(EVM)
- Oszilloskop
- Digitaler Frequenzmesser
- Audiofrequenz-Oszillator
- Dämpfungswiderstand
- Gleichstrom-Voltmeter
- Widerstand (600Ω)

Tonkopf-Azimuteinstellung

1. Spielen Sie auf dem Testband (QZZCFM) den Teil für die Azimuteinstellung (8 kHz, -20dB) ab. Drehen Sie die Azimuteinstellschraube so lange, bis die Abgaben des L-K und R-K den Höchstwert erreichen, und die Lissajoussche wellenfigur sich, wie abgebildet, 0 Grad nähert.

Anmerkung:

When L-K und R-K nicht auf demselben Punkt ihren Höchstwert erreichen, stellen Sie beide Kanäle auf den jeweiligen Höchstwert und gleichen dann aus.

2. Nehmen Sie denselben Einstellvorgang in der Wiedergabestellung vor.

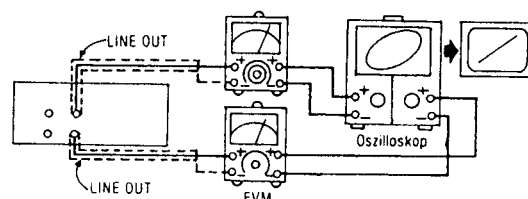


Abb. 1

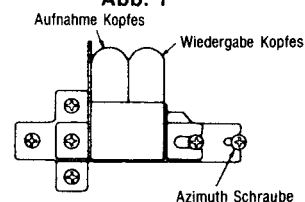


Abb. 2

Bandgeschwindigkeitseinstellung

1. Spielen Sie den Mittelteil des Testbands (QZZCWAT) ab.
2. Stellen Sie den VR im Motor (Siehe Abb. 3) so ein, daß die Abgabe den Normwert erfüllt.

Normwert: 3000 ± 15, -10Hz

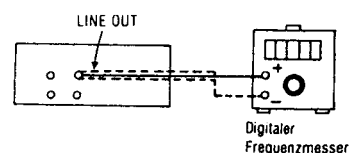


Abb. 3

Einstellung der Wiedergabeverstärkungsregelung

1. Spielen Sie auf dem Testband (QZZCFM) den Teil für die Einstellung der Verstärkungsregelung (315 Hz, 0 dB) ab.
2. Stellen Sie VR1 (L-K) und VR2 (R-K) so ein, daß die Abgabe den Normwert erfüllt.

Normwert: 0.4V ± 0.02V

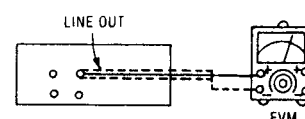


Abb. 4

Wiedergabefrequenzgang

1. Spielen Sie auf dem Testband (QZZCFM) den Teil für den Frequenzgang (315Hz, 12,5kHz~63Hz, -20dB) ab.
2. Achten Sie darauf, daß der Frequenzgang für beide Kanäle (L-K, R-K) in dem in **Abb. 6** gezeigten Bereich liegt.

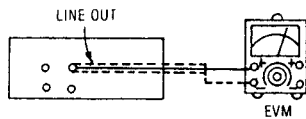


Abb. 5

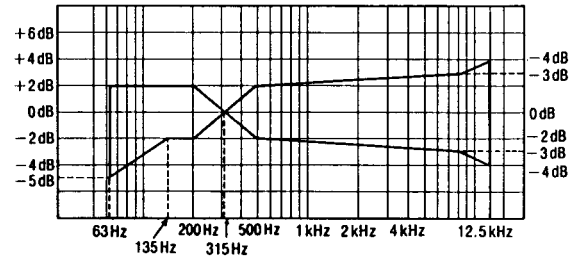


Abb. 6

Justierung des Fluoreszenzometers

1. Eine Normal band-Leercassette (QZZCRA) einsetzen und im Aufnahme-/Pause-Zustand des Gerätes das Referenz-Eingangssignalsignal (1kHz, -24dB) eingeben.
2. Die Ausgangsleistung mit dem Dämpfungswiderstand auf 0,4V justieren.
3. Den **VR51** (L-K) und **VR52** (R-K) so justieren, daß der 0dB-Segmentteil halb beleuchtet ist.

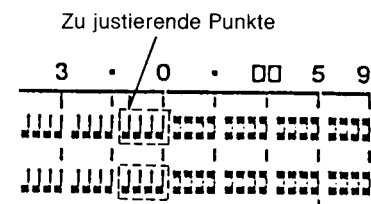


Abb. 7

Gesamtfrequenzgang

1. Legen Sie das normale Leertestband (QZZCRA) ein und stellen das Gerät auf Aufnahme-/Pause-Betrieb.
2. Geben Sie über einen Lautstärkereglern ein Bezugseingabesignal (1 kHz, -24 dB) ein.
3. Stellen Sie das Signal auf 20 dB und justieren die Frequenz von 50 Hz ~ 14 kHz.
4. Nehmen Sie das Wobbelsignal auf.
5. Geben Sie das aufgenommene Signal wieder und achten darauf, daß dieses sich im Vergleich zur Bezugsfrequenz (1 kHz) in dem in **Abb. 9** aufgezeichneten Bereich befindet.
6. Sollte das Signal nicht im Normbereich liegen, justieren Sie **VR301** (L-K) und **VR302** (R-K) so, daß der Frequenzpegel mit der Norm übereinstimmt.
 - Nach oben im Hochfrequenzbereich ausgleichen....Den vormagnetisierungsstrom anheben.
 - Nach unten im Hochfrequenzbereich ausgleichen...Den vormagnetisierungsstrom senken.
7. Wiederholen Sie die Schritte 2 ~ 6 und verwenden das CrO₂ Band (QZZCRX) und das Metallband (QZZCRZ). Der Frequenzbereich wird auf 15 kHz (50 Hz ~ 15 kHz) angehoben.
8. Achten Sie darauf, daß sich der Frequenzpegel in dem in **Abb. 10** aufgezeichneten Bereich befindet.

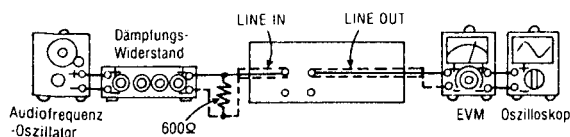


Abb. 8

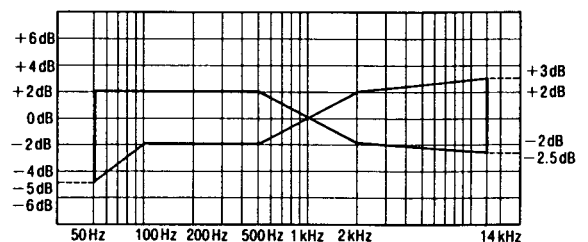


Abb. 9

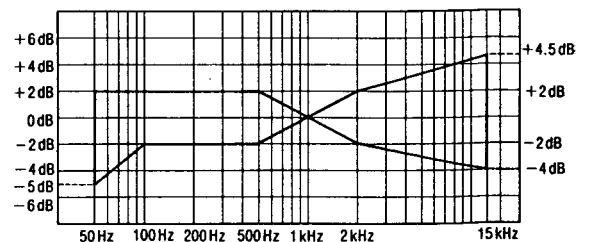


Abb. 10

Einstellung der Gesamtverstärkungsregelung

1. Legen Sie das normale Leertestband (QZZCRA) ein und stellen das Gerät auf Aufnahme-/Pause-Betrieb.
2. Legen Sie ein Bezugseingabesignal (1 kHz, -24 dB) an. Stellen Sie das Ausgangssignal auf einen Pegel von 0.4 V ein.
3. Nehmen Sie das Eingabesignal auf.
4. Geben Sie das in Schritt 3 oben aufgenommene Signal wieder und achten Sie darauf, daß das Ausgangssignal mit dem Normwert übereinstimmt.
5. Sollte der Wert nicht innerhalb der Norm liegen, justieren Sie **VR151** (L-K) und **VR152** (R-K).
6. Wiederholen Sie die Schritte 2 ~ 5 von oben so lange, bis das Ausgangssignal im Normbereich liegt.

Normwert: $0.4V \pm 0.5dB$

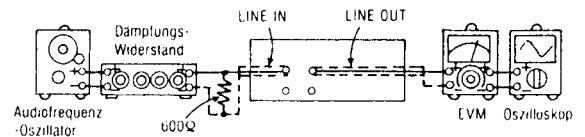


Abb. 11

HX-PRO Einstellung

1. Legen Sie das Metalleertestband (QZZCRZ) ein und stellen das Gerät auf Aufnahme-/Pause-Betrieb.
2. Schalten Sie ein Gleichspannungsvoltmeter parallel zu **R325** (L-K, 10Ω, **TP3**) und **R326** (R-K, 10Ω, **TP4**).
3. Stellen Sie **L303** (L-K) und **L304** (R-K) so ein, daß die Spannung < 110 mV Gleichspannung beträgt.

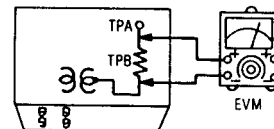


Abb. 12

TPA = [TP3 (L-K), TP4 (R-K)]
 TPB = [R325 (L-K), R326 (R-K)]

FRANÇAIS

Ceci est à utiliser conjointement avec manuel d'entretien du modèle No. RS-B705

METHODES DES MEASURES ET REGLAGES

Appareils de mesure

- Voltmètre électronique
- Oscilloscope
- Compteur de fréquence numérique
- Oscillateur de fréquence audio
- A.T.T.(Atténuateur)
- Voltmètre à C.C.
- Résistance (600Ω)

Reglage Azimutal de la tete

1. Faire jouer la portion du réglage de l'azimuth (8 kHz, -20 dB) de la bande d'essai (QZZCFM). Ajuster la vis de la mise au point azimuthale jusqu'à ce que les sorties du canal de gauche et du canal de droite soient maximisées et que la forme d'onde de Lissajous, comme il est illustré, approche de 0 degré.

Nota:

Si le canal de gauche et canal de droite ne sont pas maximisés au même point, régler le point où les niveaux de chaque canal sont maximisés et égaux.

2. Effectuer le même réglage sur le mode d'audition.

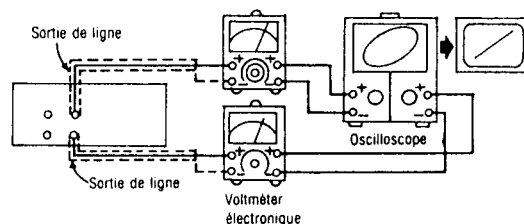


Fig. 1

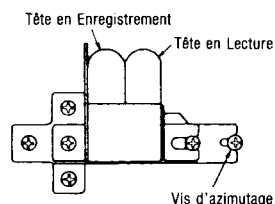


Fig. 2

Reglage de la Vitesse de Defilement

1. Faire jouer la portion médiane de la bande d'essai (QZZCWAT).
2. Régler le régulateur de tension dans le moteur (voir Fig. 3), de telle sorte que la sortie soit en deçà de la valeur standard.

Valeur standard: 3000 + 15, -10Hz

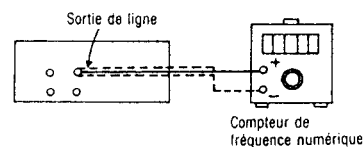


Fig. 3

Reglage de L'amplification de Lecture

1. Faire jouer la partie réglée de l'amplification (315 Hz, 0 dB) de la bande d'essai (QZZCFM).
2. Régler VR1 (canal de gauche) et VR2 (canal de droite) de telle sorte que la sortie soit en deçà de la valeur standard.

Valeur standard: 0.4V ± 0.02V

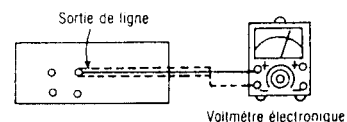


Fig. 4

Reponse en Frequence de la Lecture

- 1.Faier jouer la partie de la réponse en fréquence (315 Hz, 12.5 kHz, -63 Hz, -20 dB) de la bande d’essai (QZZCFM).
- 2.S’assurer que la réponse en fréquence soit en deçà de la plage montrée dans la Fig. 6, à la fois pour le canal de gauche et le canal de droite.

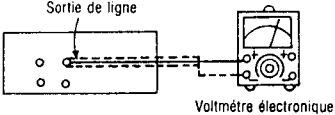


Fig. 5

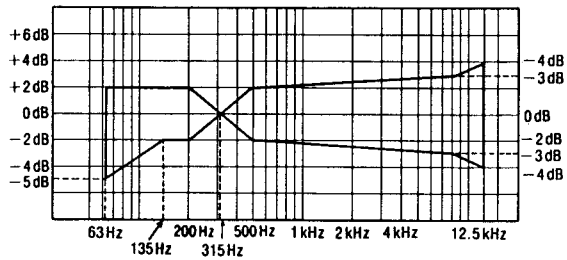


Fig. 6

Réglage du compteur fluorescent

- 1.Installer une bande vierge normale (QZZCRA) et appliquer le signal du niveau d’entrée de référence (1kHz, -24dB) sur le mode d’intermission d’enregistrement.
- 2.Régler la puissance de sortie sur 0,4V avec l’atténuateur.
- 3.Régler VR51 (canal de gauche) et VR52 (canal de droite) de telle sorte que la partie segmentée de 0dB soit à moitié éclairée.

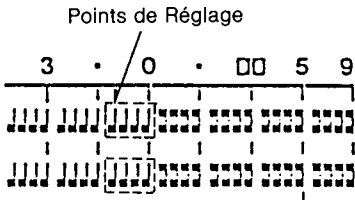


Fig. 7

Reponse en Frequence Totale

- 1.Introduire la bande d’essai vierge normale (QZZCRA) et régler l’appareil sur le mode d’intermission d’un disque.
- 2.Appliquer un signal d’entrée de référence (1 kHz, -24 dB) par l’intermédiaire d’un atténuateur.
- 3.Diminuer le signal de 20 dB et régler la fréquence de 50 Hz ~ 14 kHz.
- 4.Enregistrer le balayage de fréquence.
- 5.Faire jouer le signal enregistré et s’assurer qu’il soit en deçà de la plage montrée à la Fig. 9 en comparaison à la fréquence de référence (1 kHz).
- 6.S’il n’est pas en deçà de la plage standard, régler VR301 (canal de gauche) et VR302 (canal de droite) de telle sorte que le niveau de fréquence soit en deçà de la plage standard.
 - Elévation du niveau dans la plage de fréquence élevée..... Augmente le courant de polarisation.
 - Diminution du niveau dans la plage de fréquence élevée..... Diminue le courant de polarisation.
- 7.Répéter les étapes 2 ~ 6 ci-dessus en utilisant la band CrO₂ (QZZCRX) et la bande métallisée (QZZCRX) en augmentant la plage de fréquence à 15 kHz (50 Hz ~ 15 kHz).
- 8.S’assurer que le niveau soit en deçà de la plage montrée à la Fig. 10.

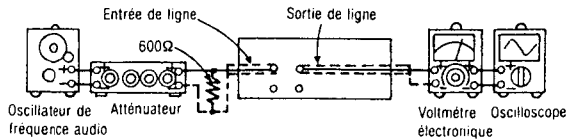


Fig. 8

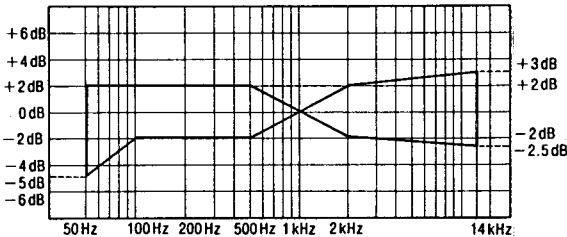


Fig. 9

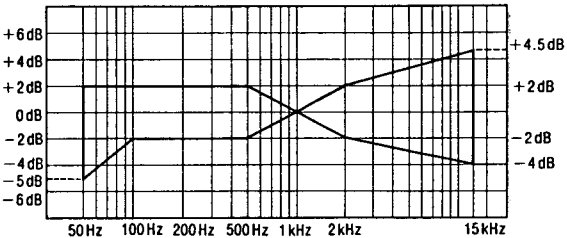


Fig. 10

Reglage de L’amplification Totale

- 1.Introduire la bande d’essai vierge normale (QZZCRA) et régler l’appareil sur le mode d’intermission d’un disque.
- 2.Appliquer un signal d’entrée de référence (1 kHz, -24 dB). Diminuer la sortie de telle sorte que son niveau devienne de 0.4 V.
- 3.Enregistrer ce signal d’entrée.
- 4.Faire jouer le signal enregistré à l’étape 3 ci-dessus, et s’assurer que la sortie en deçà de la valeur standard.
- 5.Si elle n’est pas en deçà de la valeur standard, régler VR151 (canal de gauche) et VR152 (canal de droite).
- 6.Répéter les étapes 2 ~ 5 ci-dessus jusqu’à ce que la sortie soit en deçà de la valeur standard.

Valeur standard: 0.4V ± 0.5dB

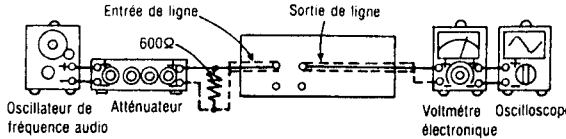


Fig. 11

Reglage de HX-PRO

- 1.Introduire la bande vierge métallisée (QZZCRZ) et régler l’appareil sur le mode d’intermission d’un disque.
- 2.Raccorder un voltmètre à C.C. à travers R325 (canal de gauche, 10 ohms, TP3) et R326 (canal de droite, 10 ohms, TP4).
- 3.Régler L303 (canal de gauche)et L304 (canal de droite) de telle sorte que la tension soit inférieure à 110 mV C.C.

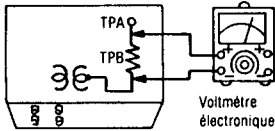


Fig. 12

TPA.... TP3 (canal de gauche)
TP4 (canal de droite)
TAB.... R325 (canal de gauche)
R326 (canal de droite)

ESPAÑOL

Sírvase utilizarse junto con manual de servicio para el model No. RS-B705

MÉTODOS DE AJUSTE Y MEDIDA

Instrumento de medición

- EVM(Voltímetro electrónico)
- Osciloscopio
- Frecuencímetro digital
- Oscilador AF
- ATT(Atenuador)
- Voltímetro CC
- Resistor(600Ω)

Ajuste Azimutal de Cabeza

- 1.Reproducir la porción de ajuste azimutal (8 kHz, -20 dB) de la cinta de prueba (QZZCFM). Variar el tornillo de ajuste azimutal hasta que las salidas del CH-I y CH-D se maximicen y la forma de onda de lissajous, como ilustrado, se acerque a grado 0.

Nota:

Si CH-I y CH-D no son maximizados en el mismo punto, ajustar al punto donde los niveles de cada canal sean maximizados e igualados.

- 2.Efectuar el mismo ajuste en la modalidad de reproducción.

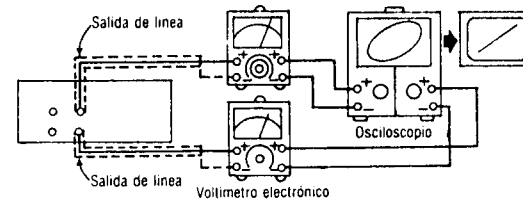


Fig. 1

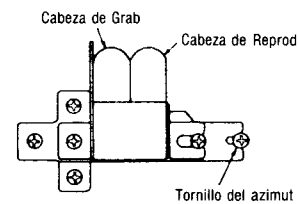


Fig. 2

Ajuste de Velocidad de Cinta

- 1.Reproducir la porción media de la cinta prueba (QZZCWAT).
- 2.Ajustar el VR en el motor (ver la Fig. 3) de manera que salida esté dentro del valor estándar.

Valor estándar: 3000 ± 15, -10Hz

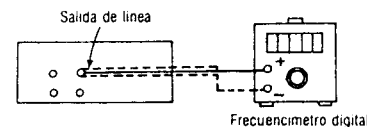


Fig. 3

Ajuste de Ganancia de Reproducción

- 1.Reproducir la porción ajustada de ganancia (315 Hz, 0 dB) de la cinta de prueba (QZZCFM).
- 2.Ajustar VR1 (CH-I) y VR2 (CH-D) de manera que la salida esté dentro del valor estándar.

Valor estándar: 0.4V ± 0.02V

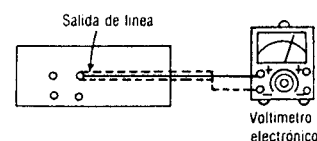


Fig. 4

Respuesta de Frecuencia de Reproducción

- 1.Reproducir la parte de respuesta de frecuencia de reproducción (315 Hz, 12.5 kHz ~ 63 Hz, -20 dB) de la cinta de prueba (QZZCFM).
- 2.Asegurarse de que la respuesta de frecuencia esté dentro de la gama mostrada en la Fig. 6 para ambos CH-I y CH-D.

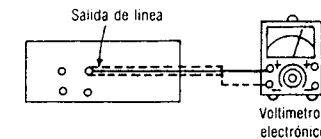


Fig. 5

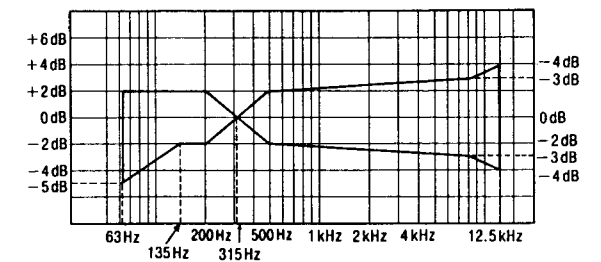


Fig. 6

Ajuste de medidor fluorescente

- 1.Colocar una cinta virgen normal(QZZCRA) y aplicar la señal de nivel de entrada de referencia(1kHz, -24dB) en la modalidad de pausa de grabación.
- 2.Ajustar la salida a 0.4V mediante atenuador.
- 3.Ajustar VR51 (CH-I) y VR52 (CH-D) de manera que la parte de segmento 0dB esté medio iluminada.

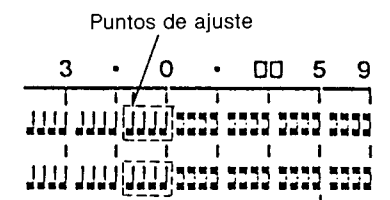


Fig. 7

Respuesta de Frecuencia Total

- 1.Poner una cinta virgen normal (QZZCRA) y poner la unidad en la modalidad de Pausa de Grabación.
- 2.Aplicar la señal de entrada de referencia (1 kHz, -24 dB) a través de un atenuador.
- 3.Atenuar la señal por 20 dB y ajustar la frecuencia de 50 Hz ~ 14 kHz.
- 4.Grabar el barrido de frecuencia.
- 5.Reproducir la señal grabada y asegurarse de que esté dentro de la gama mostrada en la Fig. 9 en comparación con la frecuencia de referencia (1 kHz).
- 6.Si no está dentro de la gama de frecuencia, ajustar VR301 (CH-I) y VR302 (CH-D) de manera que el nivel de frecuencia esté dentro de la gama estándar.
 - Subir el nivel en la gama de frecuencia alta..... Incrementar la corriente de polarización.
 - Bajar el nivel en la gama de frecuencia baja..... Disminuir la corriente de polarización.
- 7.Repetir los pasos 2 ~ 6 de arriba utilizando la cinta Croz (QZZCRX) y la cinta metálica (QZZCRZ) incrementando la gama de frecuencia a 15 kHz (50 Hz ~ 15 kHz).
- 8.Asegurarse de que el nivel esté dentro de la gama mostrada en la Fig. 10.

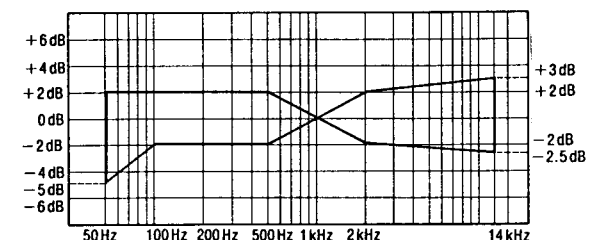


Fig. 9

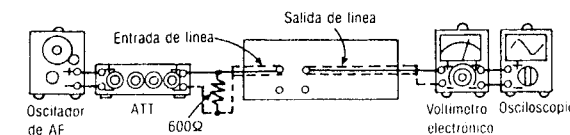


Fig. 8

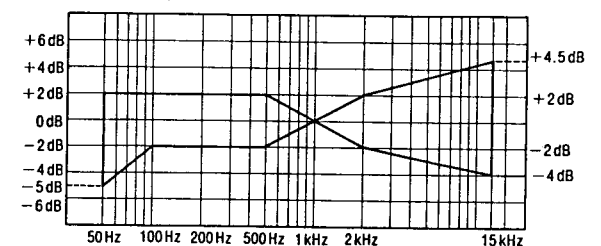
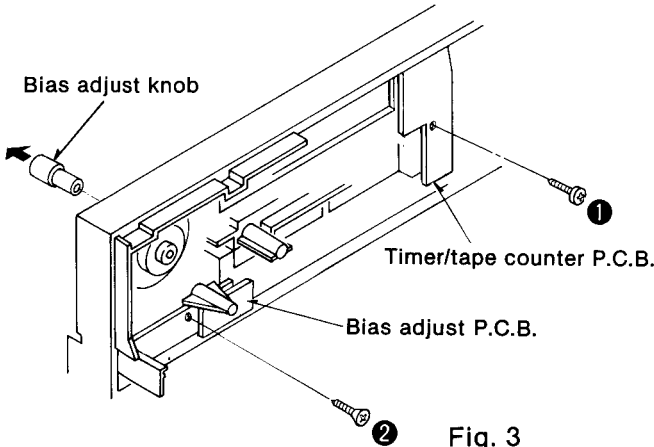
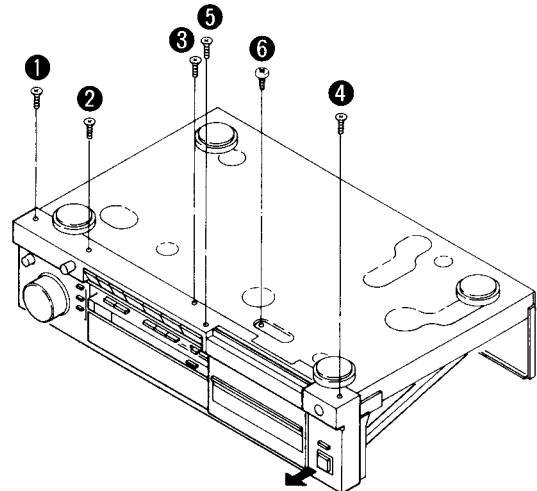
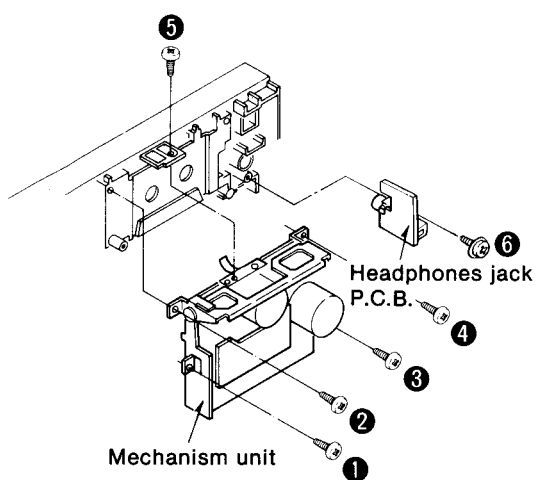
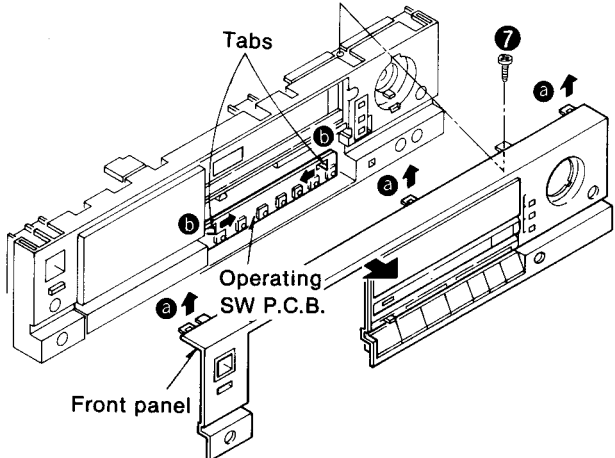


Fig. 10

Ref. No. 4	How to remove the timer P.C.B. and the bias adjust P.C.B.	Ref. No. 7	How to remove the operation switch P.C.B.
Procedure 1→2→3→4	<ul style="list-style-type: none"> • Remove the screw (①) and then remove the timer P.C.B. • Remove the screw (②). • Pull out the bias adjust knob. • Remove the bias adjust P.C.B.  <p>Bias adjust knob</p> <p>Timer/tape counter P.C.B.</p> <p>Bias adjust P.C.B.</p> <p>Fig. 3</p>	Procedure 1→7	<ul style="list-style-type: none"> • Remove the 5 screws (①~⑤)  <p>Fig. 5</p>
Ref. No. 5	How to remove the mechanism unit		
Procedure 1→5	<ul style="list-style-type: none"> • Remove the screw (⑥) (See the Fig. 5). • Remove the 5 screws (①~⑤). • Push the eject button.  <p>Headphones jack P.C.B.</p> <p>Mechanism unit</p> <p>Fig. 4</p>	<ul style="list-style-type: none"> • Remove the screw (⑦). • Pull out the input level control knob and the balance control knob. (See the Fig. 2). • Push the 3 tabs (③) and then remove the front panel. • Push the 2 tabs (⑤). 	 <p>Front panel</p> <p>Fig. 6</p>
Ref. No. 6	How to remove the headphones P.C.B.		
Procedure 1→6	<ul style="list-style-type: none"> • Remove the screw (⑥). (See the Fig. 4). 		

MEASUREMENT AND ADJUSTMENT METHODES

Measurement Condition

- Input level controls; Maximum
- Timer start switch; Off
- Noise reduction select switch; Off
- Repeat-play switch; Off

Measuring instrument

- EVM(Electronic Voltmeter)
- Oscilloscope
- Digital frequency counter
- AF oscillator

Test tape

- Head azimuth adjustment (8kHz, -20dB); QZZCFM
- Tape speed adjustment (3kHz, -10dB); QZZCWAT
- Playback frequency response (315Hz, 12.5kHz, 10kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz, 63Hz, -20dB); QZZCFM

- Multiplex filter switch; Off
- Make sure heads are clean
- Make sure capstan and pressure roller are clean
- Judgeable room temperature $20 \pm 5^\circ\text{C}$ ($68 \pm 9^\circ\text{F}$)

- ATT(Attenuator)
- DC voltmeter
- Resistor (600Ω)

- Playback gain adjustment (315Hz, 0dB); QZZCFM
- Overall frequency response, Overall gain adjustment
Normal reference blank tape; QZZCRA
CrO₂ reference blank tape; QZZCRX
Metal reference blank tape; QZZCRZ

HEAD AZIMUTH ADJUSTMENT

1. Playback the azimuth adjustment portion (8 kHz, -20 dB) of the test tape (QZZCFM). Vary the azimuth adjusting screw until the outputs of the L-CH and R-CH are maximized and the lissajous waveform, as illustrated, approaches 0 degrees.

Note: If L-CH and R-CH are not maximized at the same point, adjust to the point where the levels of each channel are maximized and equal.

2. Perform the same adjustment in the play mode.

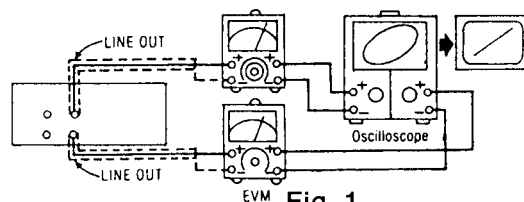


Fig. 1

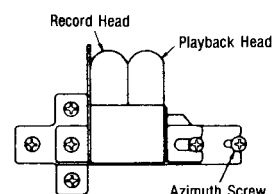


Fig. 2

TAPE SPEED ADJUSTMENT

1. Playback the middle portion of the test tape (QZZCWAT).
2. Adjust the VR in the motor (see Fig. 3) so that the output is within the standard value.

Standard value: 3000 ± 15 Hz

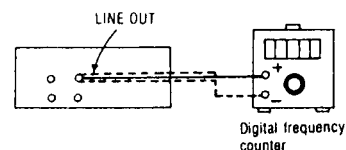


Fig. 3

PLAYBACK GAIN ADJUSTMENT

1. Playback the gain adjusted portion (315 Hz, 0 dB) of the test tape (QZZCFM).
2. Adjust VR1 (L-CH) and VR2 (R-CH) so that the output is within the standard value.

Standard value: $0.4 \pm 0.02\text{V}$

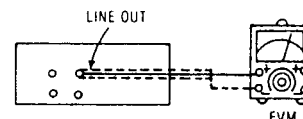


Fig. 4

PLAYBACK FREQUENCY RESPONSE

1. Playback the frequency response portion (315 Hz, 12.5 kHz ~ 63 Hz, -20 dB) of the test tape (QZZCFM).
2. Assume that the frequency response is within the range shown in Fig. 6 for both L-CH and R-CH.

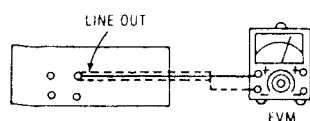


Fig. 5

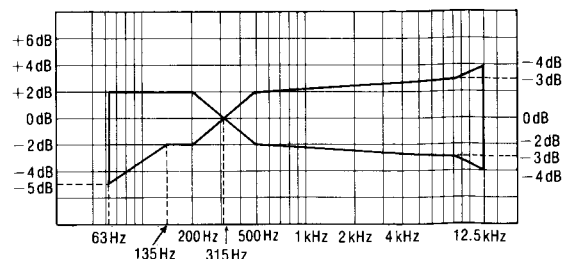


Fig. 6

Ajuste de Ganancia Total

1. Insertar la cinta de prueba en blanco normal (QZZCRA) y poner la unidad en modalidad de pausa de Grabación.
2. Aplicar la señal de entrada de referencia (1 kHz, -24 dB). Atenuar la salida de manera que su nivel se haga 0.4 V.
3. Grabar la señal de entrada.
4. Reproducir la señal grabada en el paso 3 de arriba y asegurarse de que la salida esté dentro del valor estándar.
5. Si no está dentro del valor estándar, ajustar **VR151** (CH-I) y **VR152** (CH-D).
6. Repetir el paso 2 ~ 5 de arriba hasta que la salida esté dentro del valor estándar.

Valor estándar: $0.4V \pm 0.5dB$

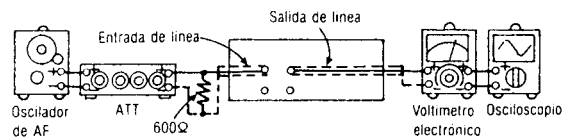


Fig. 11

Ajuste de HX-PRO

1. Insertar la cinta en blanco metálica (QZZCRZ) y poner la unidad en la modalidad de pausa de Grabación.
2. Conectar un voltímetro CC través de **R325** (CH-I, 10 ohmios, **TP3**) y **R326** (CH-D, 10 ohmios, **TP4**).
3. Ajustar **L303** (CH-I) y **L304** (CH-D) de manera que la tensión se haga menos de 110 mV CC.

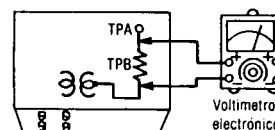


Fig. 12

TPA = [TP3 (CH-I), TP4 (CH-D)]
TPB = [R325 (CH-I), R326 (CH-D)]

FLUORESCENT METER ADJUSTMENT

1. Set a normal blank tape (QZZCRA) and apply the reference input level signal (1 kHz, -24 dB) in record pause mode.
2. Adjust the output to 0.4 V by attenuator.
3. Adjust **VR51** (L-CH) [**VR52** (R-CH)] so that the 0 dB segment part is half lighted.

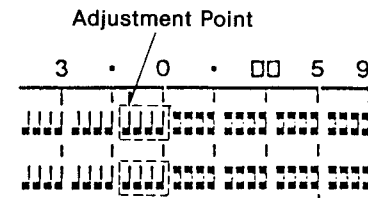


Fig. 7

OVERALL FREQUENCY RESPONSE

1. Insert the Normal blank test tape (QZZCRA) and set the unit to the Record Pause mode.
2. Apply a reference input signal (1 kHz, -24 dB) through an attenuator.
3. Attenuate the signal by 20 dB and adjust the frequency from 50 Hz ~ 14 kHz.
4. Record the frequency sweep.
5. Playback the recorded signal and assure that it is within the range shown in **Fig. 9** in comparison to the reference frequency (1 kHz).
6. If it is not within the standard range, adjust VR301 (L-CH) and VR302 (R-CH) so that the frequency level is within the standard range.
 - Level up in high frequency range.....Increase the bias current.
 - Level down in high frequency range...Decrease the bias current.
7. Repeat steps 2 ~ 6 above using the CrO₂ tape(QZZCRX) and the Metal tape(QZZCRZ) increasing the frequency range to 15 kHz (50 Hz ~ 15 kHz).
8. Assure that the level is within the range shown in **Fig. 10**.

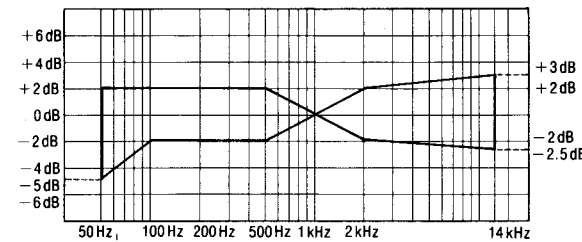


Fig. 9

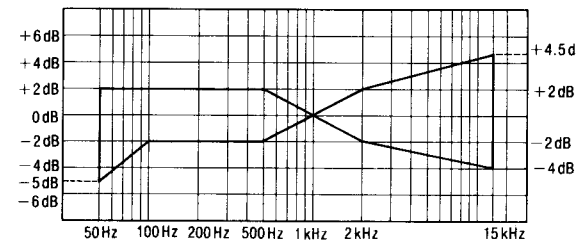


Fig. 10

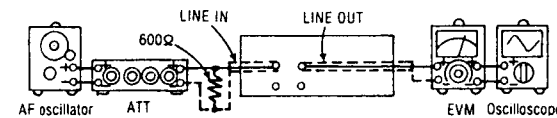


Fig. 8

OVERALL GAIN ADJUSTMENT

1. Insert the Normal blank test tape (QZZCRA) and set the unit to the Record pause mode.
2. Apply a reference input signal (1 kHz, -24 dB). Attenuate the output so that its level becomes 0.4 V.
3. Record this input signal.
4. Playback the signal recorded in step 3 above, and assure that the output is within the standard value.
5. If it is not within the standard value, adjust VR151 (L-CH) and VR152 (R-CH).
6. Repeat the step 2 ~ 5 above until the output is within the standard value.

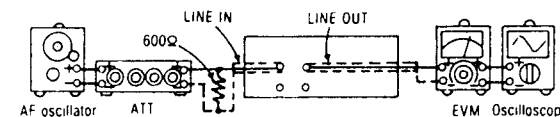


Fig. 11

Standard value: 0.4V ± 0.5dB

HX-PRO ADJUSTMENT

1. Insert the Metal blank tape (QZZCRZ) and set the unit to the Record Pause mode.
2. Connect a DC voltmeter across R325 (L-CH., 10 ohms, TP3) and R326 (R-CH., 10 ohms, TP4).
3. Adjust L303 (LCH) and L304 (RCH) so that the voltage becomes less than 110 mV DC.

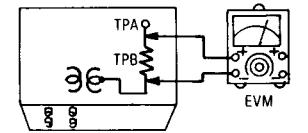


Fig. 12

TPA { TP3 (L-CH)
TP4 (R-CH) } TPB { R325 (L-CH)
R326 (R-CH) }

• Adjustment point

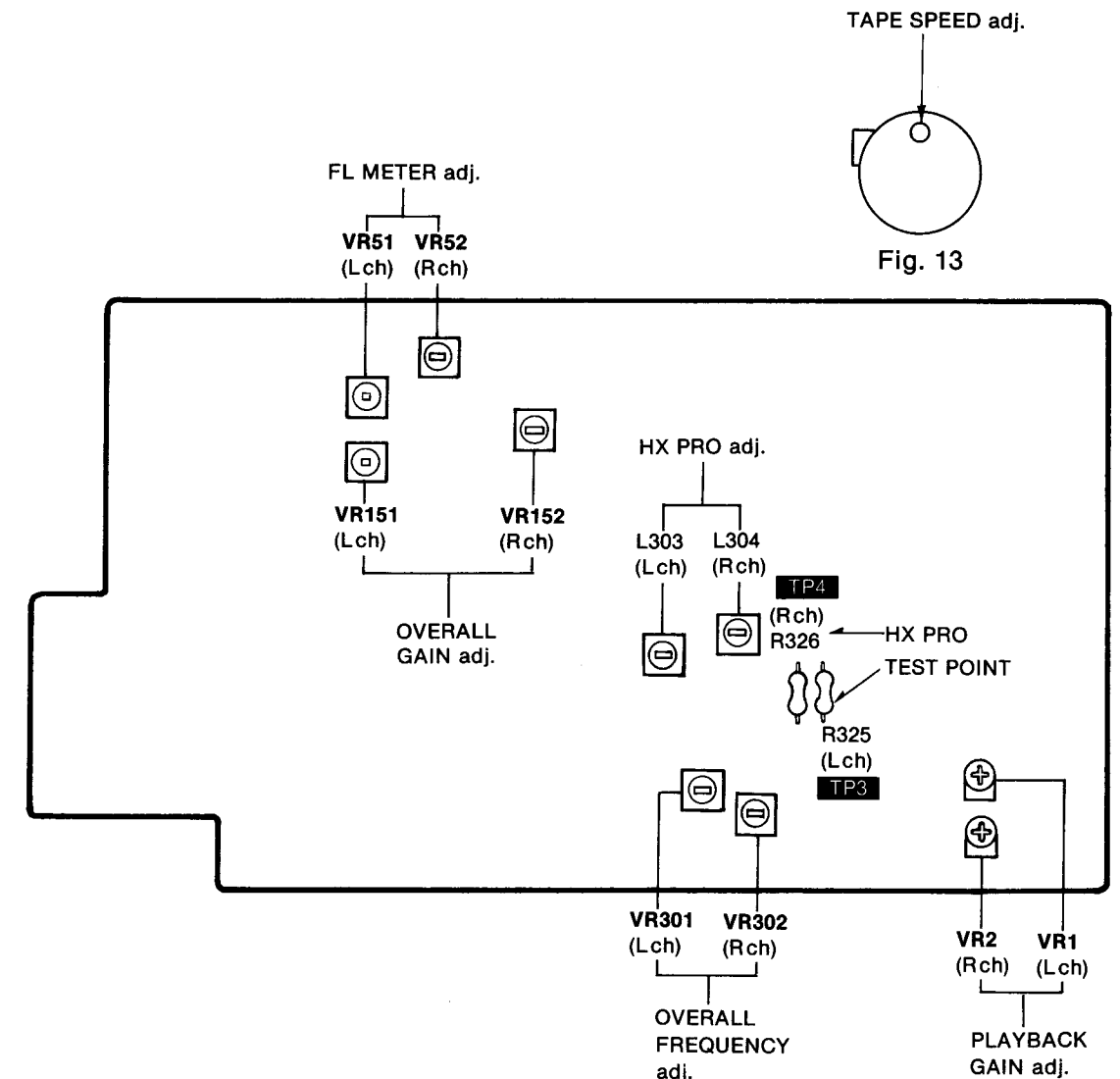
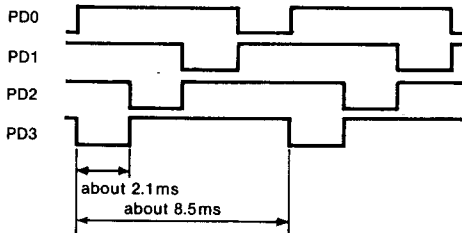
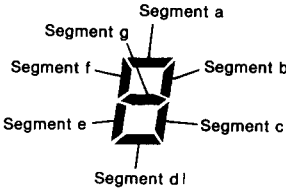
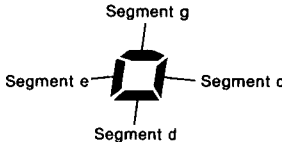
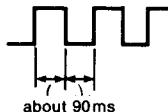
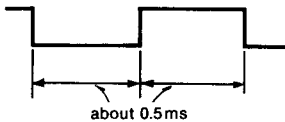


Fig. 13

■ MICROCOMPUTER TERMINAL FUNCTION AND WAVEFORM (IC901: LM6495G-2104)

Terminal No.	Symbol	Function/operation																										
1, 42	XTAL	about 800kHz																										
2	PC0	Scan input	<div>Key scan matrix</div> <table><tr><th></th><th>PD0</th><th>PD1</th><th>PD2</th><th>PD3</th></tr><tr><th>PC0</th><td>auto rec mute</td><td>rew</td><td>Timer play</td><td>REC INH SW</td></tr><tr><th>PC1</th><td>pause</td><td>ff</td><td>Timer rec</td><td>PACK SW</td></tr><tr><th>PC2</th><td>rec</td><td>—</td><td>monitor sw</td><td>—</td></tr><tr><th>PC3</th><td>stop</td><td>play</td><td>Counter Reset sw</td><td>—</td></tr></table>		PD0	PD1	PD2	PD3	PC0	auto rec mute	rew	Timer play	REC INH SW	PC1	pause	ff	Timer rec	PACK SW	PC2	rec	—	monitor sw	—	PC3	stop	play	Counter Reset sw	—
	PD0			PD1	PD2	PD3																						
PC0	auto rec mute			rew	Timer play	REC INH SW																						
PC1	pause			ff	Timer rec	PACK SW																						
PC2	rec	—		monitor sw	—																							
PC3	stop	play	Counter Reset sw	—																								
3	PC1																											
4	PC2																											
5	PC3																											
6	INT	Connection of GND																										
7	RES	Reset the microcomputer when power switch is thrown in. Reset at "L".																										
8	PD0	Scan output																										
9	PD1																											
10	PD2																											
11	PD3																											
12	PE0	Pull up 5V																										
13	PE1	<ul style="list-style-type: none">• Segment a (PE1)• Segment b (PE2)• Segment c (PE3)• Segment d (PF0)• Segment e (PF1)• Segment f (PF2)• Segment g (PF3) <div></div> <div></div>																										
14	PE2																											
15	PE3																											
16	PF0																											
17	PF1																											
18	PF2																											
19	PF3																											
<ul style="list-style-type: none">• According to the internal command of IC, the counter number changes with 2 turns of the take-up reel. Also, the running display changes by 1 with 1/2 turn.• Each waveform changes because of dynamic lighting.																												
20	TEST	Connection of GND																										
21	VSS																											
22	PG0	Connection of GND																										
23	PG1	"L" when REC/REC PAUSE mode switch is on mode. "L" when Timer REC mode is power on in about 1.25sec.																										
24	PG2	"L" when REC switch is on mode.																										
25	PG3	<div>"L" when PLAY switch is on mode.<ul style="list-style-type: none">• MUSIC SELECTOR mode• PAUSE mode<div></div><div></div></div>																										

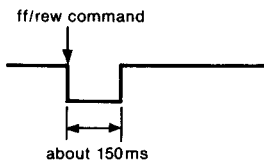
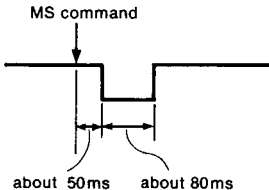
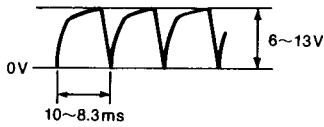
Terminal No.	Symbol	Function/operation
26	PH0	“L” when TAPE of MONITOR SELECTOR and POWER switch is on mode. “L” when PLAY from STOP, PAUSE, FF, REW and MS is moving. (auto monitor select)
27	PH1	“L” when SOURCE of MONITOR SELECT is ON mode. “L” when REC PAUSE mode from STOP and PAUSE is moving.
28	MSP	MUSIC SELECTOR, NON RECORDED SPACE pulse input Record...“L” Non-record...“H”
29	PH3	Source mode...“L” Tape mode...“H” FF/REW/MS...“L”
30	PI0	• Meter mute output...“L” (PI0)
31	PI1	• Lineout mute output...“H” (PI1)
32	PI2	• REC Amp mute output...“L” (PI2)

		Stop Pause ff/rew	play	Rec pause		Rec play	
				Normal	A.R.M.	Normal	Auto Rec Mute
TAPE mode	PI0	L	H	L	L	H	L
	PI1	H	L	H	H	L	L
	PI2	L	L	L	L	H	L
SOURCE mode	PI0	H	H	H	L	H	L
	PI1	L	L	L	L	L	L
	PI2	L	L	L	L	H	L

PI0, PI2 { “H”=Muting OFF
“L”=Muting ON


PI1 { “H”=Muting ON
“L”=Muting OFF

33	PA0	FF/REW motor speed control PLAY mode...“L”
34	PA1	FF/REW motor drive REW mode...“H”
35	PA2	FF/REW motor drive FF mode...“H”
36	PA3	Capstan motor drive STOP/PAUSE/FF/REW/MS mode...“H” PLAY mode...“L”
37	PB0	Plunger drive During music select mode, plunger attraction is maintained to keep Cue/Review mode.
38	PB1	Plunger drive Mechanism mode selector control output • STOP...PLAY <div><div>play command</div><div>about 85ms about 290ms about 460ms</div></div>

Terminal No.	Symbol	Function/operation
38	PB1	<ul style="list-style-type: none"> • STOP...FF/REW  • PLAY...MS 
39	PB2	<ul style="list-style-type: none"> • Reel base pulse Reel base rotation is detected by photo sensor. Pulses are used for tape-end detection and counter up/down.
40	POF	<p>Power of DET</p> 
41	V _{DD}	Operative on about 5V

■ RESISTORS & CAPACITORS

Notes: * Important safety notice:

Components identified by  mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

* Bracketed indications in Ref. No. columns specify the area

Parts without these indications can be used for all areas.

Numbering System of Resistor

Example

ERD	25	F	J	102
Type	Wattage	Shape	Tolerance	Value
ERX	2	AN	J	471
Type	Wattage	Shape	Tolerance	Value

Numbering System of Capacitor

Example

ECKD	1H	102	Z	F
Type	Voltage	Value	Tolerance	Peculiarity
ECEA	50	M		330
Type	Voltage	Peculiarity		Value (33×10 ⁰ microfarad)

Resistor Type	Wattage	Tolerance
ERD : Carbon	10 : 1/8W	J : $\pm 5\%$
ERG : Metal Oxide	12 : 1/2W	F : $\pm 1\%$
ERX : Metal Film	25 : 1/4W	G : $\pm 2\%$
ERQ : Fuse Type Metal	1A : 1W	K : $\pm 10\%$
ERD () L : Carbon (chip)	18 : 1/8W	
ERO () K : Metal Film (chip)	S2 : 1/4W	
ERC : Solid	S1 : 1/2W	
	2F : 1/4W	
	50 : 1/2W	
	2A : 2W	

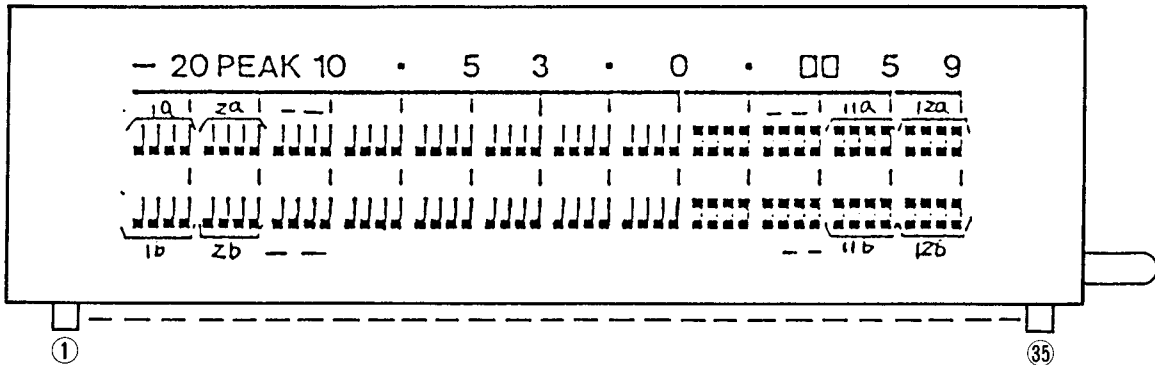
Capacitor Type	Voltage	Tolerance
ECE : Electrolytic	0J : 6.3V	C : $\pm 0.25\text{pF}$
ECCD : Ceramic	1A : 10V	J : $\pm 5\%$
ECKD : Ceramic	1C : 16V	K : $\pm 10\%$
ECQM : Polyester	1E : 25V	Z : $+80\%$
	1H : 50V	-20%
ECQP : Polypropylene	1V : 35V	P : $+100\%$
	50 : 50V	-0%
ECG : Ceramic	05 : 50V	M : $\pm 20\%$
ECEAD00N : Non Polar Electrolytic	2H : 500V	
	2A : 100V	D : $\pm 0.5\text{pF}$
QCU □ : Ceramic (Chip Type)	1 : 100V	G : $\pm 2\%$
ECUX : Ceramic (Chip Type)	KC : 400V AC	
ECF : Semiconductor	KC : 125VAC (UL)	
	1J : 63V	
EECW : Liquid electrolyte double layer capacitor		

Ref. No.	Part No.	Part Code	Ref. No.	Part No.	Part Code	Ref. No.	Part No.	Part Code
RESISTORS			R169, R170	ERDS2TJ242	001 152 3150 0	R417, R418	ERDS2TJ152	001 152 2350 8
R1, R2	ERD25TJ683	001 152 0476 3	R171, R172	ERDS2TJ221	001 152 2431 8	R419, R420	ERDS2TJ683	001 152 2450 5
R3, R4	ERDS2TJ121	001 152 2349 1	R173, R174	ERDS2TJ122	001 152 2423 8	R421, R422	ERDS2TJ222	001 152 2353 5
R9, R10	ERDS2TJ124	001 152 2425 6	R175, R176	ERDS2TJ122	001 152 2423 8	R423, R424	ERDS2TJ823	001 152 2456 9
R11, R12	ERDS2TJ472	001 152 2362 4	R177, R178	ERDS2TJ330	001 152 2355 3	R430	ERDS2TJ473	001 152 2363 3
R13, R14	ERD25FJ472	001 152 0311 3	R179, R180	ERDS2TJ332	001 152 2357 1	R431, R432	ERD25FJ681	001 152 0342 6
R15, R16	ERD25FJ472	001 152 0311 3	R181, R182	ERDS2TJ160	001 150 3019 2	R433, R434	ERDS2TJ103	001 152 2347 3
R18	ERD25TJ183	001 152 1852 5	R183, R184	ERDS2TJ102	001 152 2346 4	R451, R452	ERDS2TJ242	001 152 3150 0
R19, R20	ERDS2TJ682	001 152 2365 1	R185, R186	ERDS2TJ103	001 152 2347 3	R453, R454	ERDS2TJ274	001 152 2437 2
R21	ERD25FJ103	001 152 0216 1	R191, R192	ERDS2TJ103	001 152 2347 3	R455, R456	ERDS2TJ274	001 152 2437 2
R23, R24	ERDS2TJ274	001 152 2437 2	R193	ERDS2TJ103	001 152 2347 3	R457, R458	ERDS2TJ472	001 152 2362 4
R25	ERDS2TJ104	001 152 2348 2	R194	ERDS2TJ472	001 152 2362 4	R459, R460	ERDS2TJ332	001 152 2357 1
R50	ERG2SJ820	001 151 5680 6	R195, R196	ERDS2TJ103	001 152 2347 3	R461, R462	ERDS2TJ102	001 152 2346 4
R51	ERD2FCG390	001 152 0195 9	R201	ERDS2TJ103	001 152 2347 3	R463, R464	ERDS2TJ333	001 152 2358 0
R52	ERG2SJ820	001 151 5680 6	R202	ERD25FJ682	001 152 0343 5	R465, R466	ERDS2TJ823	001 152 2456 9
R53, R54	ERD25TJ104	001 152 1823 0	R203	ERD25FJ470	001 152 0309 7	R467, R468	ERDS2TJ152	001 152 2350 8
R55	ERDS2TJ223	001 152 2432 7	R204	ERD25TJ683	001 152 0476 3	R469, R470	ERDS2TJ683	001 152 2450 5
R56	ERDS2TJ473	001 152 2363 3	R206	ERDS2TJ473	001 152 2363 3	R471, R472	ERDS2TJ222	001 152 2353 5
R57, R58	ERDS2TJ223	001 152 2432 7	R207	ERD25FJ103	001 152 0216 1	R473, R474	ERDS2TJ823	001 152 2456 9
R61, R62	ERD25TJ333	001 152 1887 4	R208	ERDS2TJ332	001 152 2357 1	R480	ERDS2TJ473	001 152 2363 3
R63, R64	ERDS2TJ104	001 152 2348 2	R209	ERDS2TJ223	001 152 2432 7	R481, R482	ERD25FJ681	001 152 0342 6
R65, R66	ERD2FCG121	001 152 0187 9	R210	ERDS2TJ333	001 152 2358 0	R483, R484	ERD25FJ103	001 152 0216 1
R67, R68	ERDS2TJ680	001 152 2448 9	R301	ERD25FJ1R0	001 152 0208 1	R491	ERD25FJ272	001 152 0273 2
R71, R72	ERDS2TJ122	001 152 2423 8	R303, R304	ERDS2TJ223	001 152 2432 7	R601, R602	ERD2FCJ477	001 152 2480 9
R73, R74	ERDS2TJ333	001 152 1887 4	R305, R306	ERD25FJ180	001 152 0246 5	R603	ERDS2TJ561	001 152 2364 2
R75, R76	ERD25FJ821	001 152 0354 2	R307	ERG2SJ221	001 151 3783 8	R604	ERD25FJ681	001 152 0342 6
R77	ERD25FJ472	001 152 0311 3	R308	ERG1SJ561P	001 151 3003 5	R607	ERD25FJ332	001 152 0287 6
R79	ERD2FCG470	001 152 0197 7	R315, R316	ERDS2TJ154	001 152 2427 4	R608	ERDS2TJ272	001 152 2354 4
R81	ERD2FCG820	001 152 0200 9	R317, R318	ERDS2TJ333	001 152 2358 0	R611, R612	ERQ14LKR12E	
R91	ERDS2TJ103	001 152 2347 3	R319	ERDS2TJ332	001 152 2357 1	R613	ERD2FCG150	001 152 0188 8
R92	ERDS2TJ473	001 152 2363 3	R322	ERDS2TJ682	001 152 2365 1	R614	ERD25FJ821	001 152 0354 2
R93	ERDS2TJ103	001 152 2347 3	R323	ERDS2TJ102	001 152 2346 4	R701	ERDS2TJ332	001 152 2357 1
R101, R102	ERDS2TJ223	001 152 2432 7	R324	ERDS2TJ103	001 152 2347 3	R702	ERDS2TJ472	001 152 2362 4
R103, R104	ERDS2TJ102	001 152 2346 4	R325, R326	ERD2FCG100	001 152 0185 1	R703	ERDS2TJ123	001 152 2424 7
R151, R152	ERDS2TJ472	001 152 2362 4	R331, R332	ERD25FJ100	001 152 0213 4	R711, R712	ERDS2TJ103	001 152 2347 3
R157	ERDS2TJ102	001 152 2346 4	R333	ERD25TJ473	001 152 1904 0	R713	ERDS2TJ103	001 152 2347 3
R158	ERD25FJ102	001 152 0215 2	R334	ERD25FJ102	001 152 0215 2	R714	ERDS2TJ682	001 152 2365 1
R159, R160	ERDS2TJ103	001 152 2347 3	R401, R402	ERDS2TJ102	001 152 2346 4	R715	ERDS2TJ102	001 152 2346 4
R161, R162	ERDS2TJ472	001 152 2362 4	R403, R404	ERDS2TJ472	001 152 2362 4	R723	ERDS2TJ681	001 152 2449 8
R163, R164	ERDS2TJ121	001 152 2349 1	R409, R410	ERDS2TJ332	001 152 2357 1	R724	ERDS2TJ271	001 152 2435 4
R165, R166	ERDS2TJ221	001 152 2431 8	R411, R412	ERDS2TJ102	001 152 2346 4	R731, R732	ERDS2TJ102	001 152 2346 4
R167, R168	ERDS2TJ330	001 152 2355 3	R413, R414	ERDS2TJ333	001 152 2358 0	R733, R734	ERDS2TJ102	001 152 2346 4
			R415, R416	ERDS2TJ823	001 152 2456 9	R901	ERD2FCG390	001 152 0195 9

Ref. No.	Part No.	Part Code	Ref. No.	Part No.	Part Code	Ref. No.	Part No.	Part Code
R902	ERD25FJ821	001 152 0354 2	C91	ECKD1H223PF	001 103 1510 9	C421, C422	ECEA1HUR22	001 120 3247 0
R904	ERDS2TJ103	001 152 2347 3	C92	ECEA1CU221	001 120 2833 2	C423, C424	ECEA50ZR68	001 120 1290 5
R905	ERDS2TJ683	001 152 2450 5	C101, C102	ECEA1HUR22	001 120 3247 0	C429, C430	ECCF1H121J	001 103 0378 9
R906	ERD25TJ105	001 152 0446 9	C153, C154	ECKD1H221KB	001 103 1487 1	C431, C432	ECEA1EU4R7	001 120 2840 3
R912, R913	ERD25TJ473	001 152 1904 0	C155, C156	ECEA1HUR47	001 120 3249 8	C437, C438	ECQM1H472JZ	001 106 0801 0
R914, R915	ERD25TJ473	001 152 1904 0	C157, C158	ECQM1H223JZ	001 106 0739 9	C451, C452	ECKD1H122KB	001 103 1459 5
R919, R920	ERDS2TJ105	001 152 2422 9	C159, C160	ECQM1H472JZ	001 106 0801 0	C453, C454	ECQM1H472JZ	001 106 0801 0
R921, R922	ERDS2TJ122	001 152 2423 8	C161, C162	ECQM1H392JZ	001 106 0790 6	C455, C456	ECEA1CU100	001 120 2905 3
R923	ERDS2TJ122	001 152 2423 8	C165, C166	ECQM1H223JZ	001 106 0739 9	C457, C458	ECQM1H473JZ	001 106 0810 9
R924, R925	ERDS2TJ103	001 152 2347 3	C169, C170	ECEA1H183JV		C459, C460	ECEA1HUR22	001 120 3247 0
R927	ERDS2TJ681	001 152 2449 8	C173, C174	ECEA1EU4R7	001 120 2840 3	C461, C462	ECEA50ZR68	001 120 1290 5
R928	ERDS2TJ391	001 152 2360 6	C175, C176	ECBT1H561KB5	001 103 9079 1	C463, C464	ECQM1H103JZ	001 106 0667 8
R931, R932	ERDS2TJ103	001 152 2347 3	C177, C178	ECCF1H121J	001 103 0378 9	C465, C466	ECQM1H472JZ	001 106 0801 0
R933	ERD2FCJ5R6	001 152 0202 7	C202	ECQM1H103JZ	001 106 0667 8	C467, C468	ECEA1CU100	001 120 2905 3
R934	ERDS2TJ103	001 152 2347 3	C203	ECEA1CU100	001 120 2905 3	C469, C470	ECQM1H473JZ	001 106 0810 9
R938	ERD2FCJ5R6	001 152 0202 7	C204	ECCD1H470K	001 103 0627 1	C471, C472	ECEA1HUR22	001 120 3247 0
R939	ERDS2TJ392	001 152 2439 0	C205	ECEA1HU010	001 120 2842 1	C473, C474	ECEA50ZR68	001 120 1290 5
R940	ERDS2TJ561	001 152 2364 2	C301	ECQP1H53JZW	001 106 3505 3	C475, C476	ECCF1H121J	001 103 0378 9
R943	ERDS2TJ103	001 152 2347 3	C302	ECCW1H100D5	001 103 6137 0	C477	ECEA1EU4R7	001 120 2840 3
R944	ERDS2TJ223	001 152 2432 7	C303	ECQM1H562JZ	001 106 0820 7	C481, C482	ECEA1CU100	001 120 2905 3
R945	ERDS2TJ682	001 152 2365 1	C304, C305	ECQM1H472JZ	001 106 0801 0	C483, C484	ECEA1CU100	001 120 2905 3
R946, R950	ERDS2TJ471	001 152 2361 5	C306	ECQM1H472JZ	001 106 0801 0	C487, C488	ECKD1H152KB	001 103 1467 5
R955	ERD25FJ103	001 152 0216 1	C307	ECEA1EU4R7	001 120 2840 3	C490	ECEA1EU4R7	001 120 2840 3
CAPACITORS			C315, C316	ECKD1H223PF	001 103 1510 9	C601	ECEA1CU222	001 120 3074 3
C1, C2	ECKD1H221KB	001 103 1487 1	C317, C318	ECCF1H121J	001 103 0378 9	C602	ECEA1EU102	001 120 2705 9
C3, C4	ECCF1H121J	001 103 0378 9	C319, C320	ECBT1H681KB5	001 103 9167 2	C603, C604	ECKD1H223PF	001 103 1510 9
C5, C6	ECKD1H221KB	001 103 1596 7	C321, C322	ECBT1H561KB5	001 103 9079 1	C605, C606	ECEA1CU221	001 120 2833 2
C7, C8	ECQM1H273JZ	001 106 0760 2	C323, C324	ECQM1H223JZ	001 106 0739 9	C609	ECEA1CU332	001 120 3201 4
C9, C10	ECEA1HU2R2	001 120 3253 2	C325, C326	ECQV1H104JZ	001 106 2571 7	C613	ECKD1H152KB	001 103 1467 5
C11, C12	ECQM1H103JZ	001 106 0667 8	C327, C328	ECQM1H103JZ	001 106 0667 8	C614	ECEA1AU101	001 120 2830 5
C21	ECKR1H103ZF5		C330	ECEA1CU100	001 120 2905 3	C615	ECKDKC103PF2	001 103 3734 7
C23, C24	ECEA1EU4R7	001 120 2840 3	C401, C402	ECKD1H152KB	001 103 1467 5	C711, C712	ECEA1CU330	001 120 2834 1
C28	ECEA1EU4R7	001 120 2840 3	C403, C404	ECQM1H472JZ	001 106 0801 0	C901	ECKD1H122KB	001 103 1459 5
C51, C52	ECEA1AU331	001 120 3649 6	C405, C406	ECEA1CU100	001 120 2905 3	C902	ECEA1AU101	001 120 2830 5
C54	ECEA1AU331	001 120 3649 6	C407, C408	ECQM1H473JZ	001 106 0810 9	C903	ECKD1H223PF	001 103 1510 9
C55	ECEA1CU220	001 120 2906 2	C409, C410	ECEA1HUR22	001 120 3247 0	C904	ECEA1EU4R7	001 120 2840 3
C57, C58	ECQV1H104JZ	001 106 2571 7	C411, C412	ECEA50ZR68	001 120 1290 5	C905	ECEA1HU2R2	001 120 3253 2
C61, C62	ECCD1H220K	001 103 0493 7	C413, C414	ECQM1H103JZ	001 106 0667 8	C906, C907	ECKD1H221KB	001 103 1487 1
C71, C72	ECEA1CU100	001 120 2905 3	C415, C416	ECQM1H472JZ	001 106 0801 0	C908	ECKR1H103ZF5	
C79	ECEA1CU101	001 120 2926 8	C417, C418	ECEA1CU100	001 120 2905 3	C911	ECEA1CN100S	001 120 0233 8
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DESCRIPTION OF FL PANEL

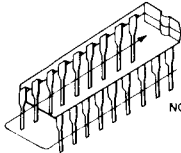
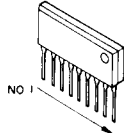
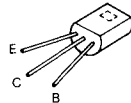
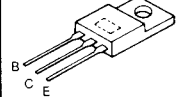
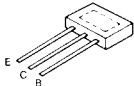

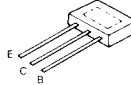
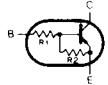
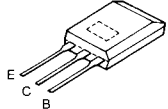
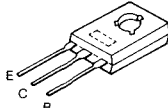
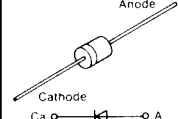
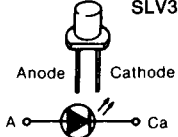
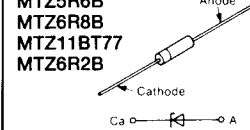
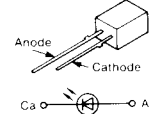
• SEGMENT



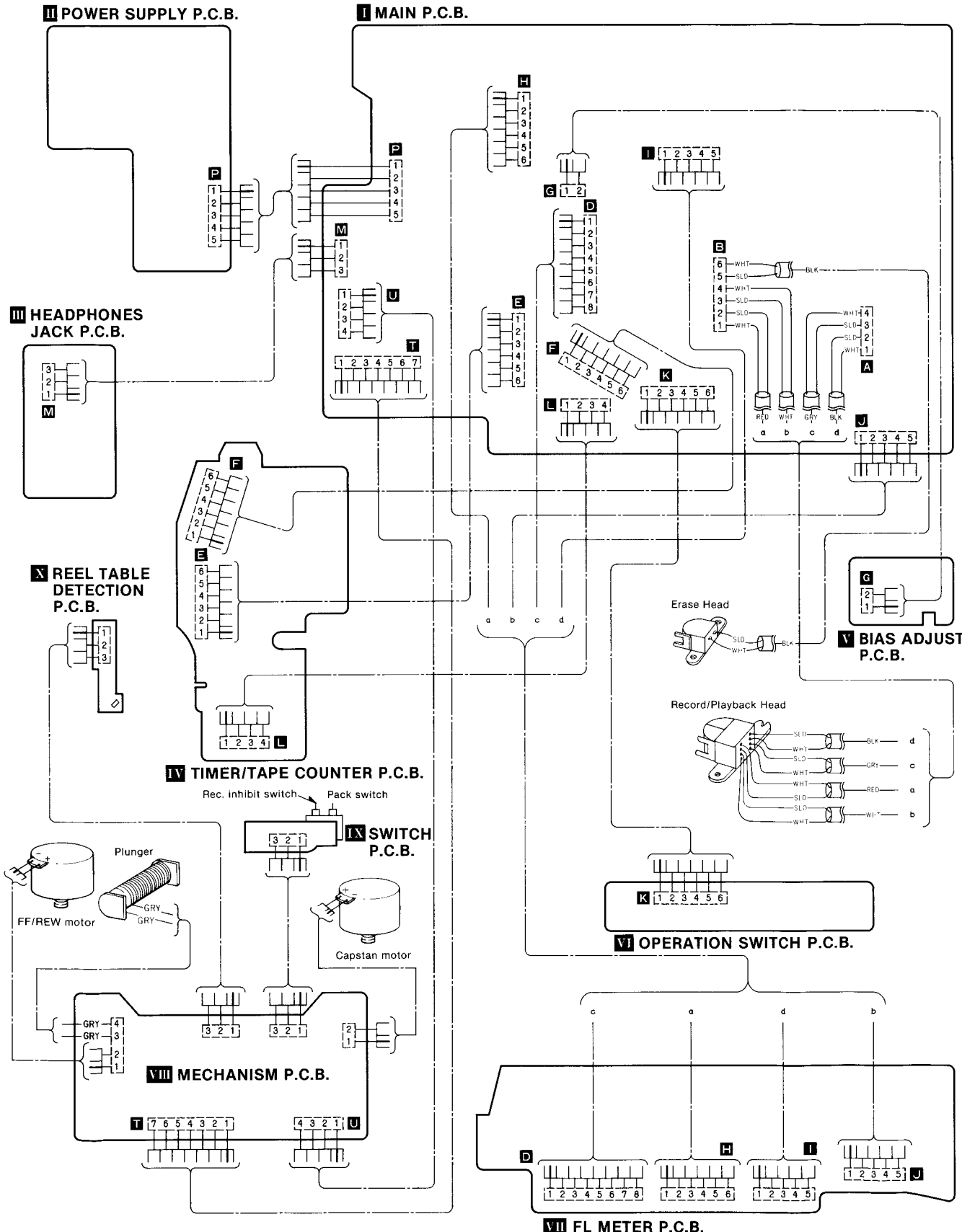
• PIN CONNECTION

PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35			
CONNECTION	F	F	1	2	3	4	5	6	7	8	9	10	11	12	Gd	SC	N	C	N	C	N	C	1	2	3	4	5	6	7	8	9	10	11	12	N	P	F	F

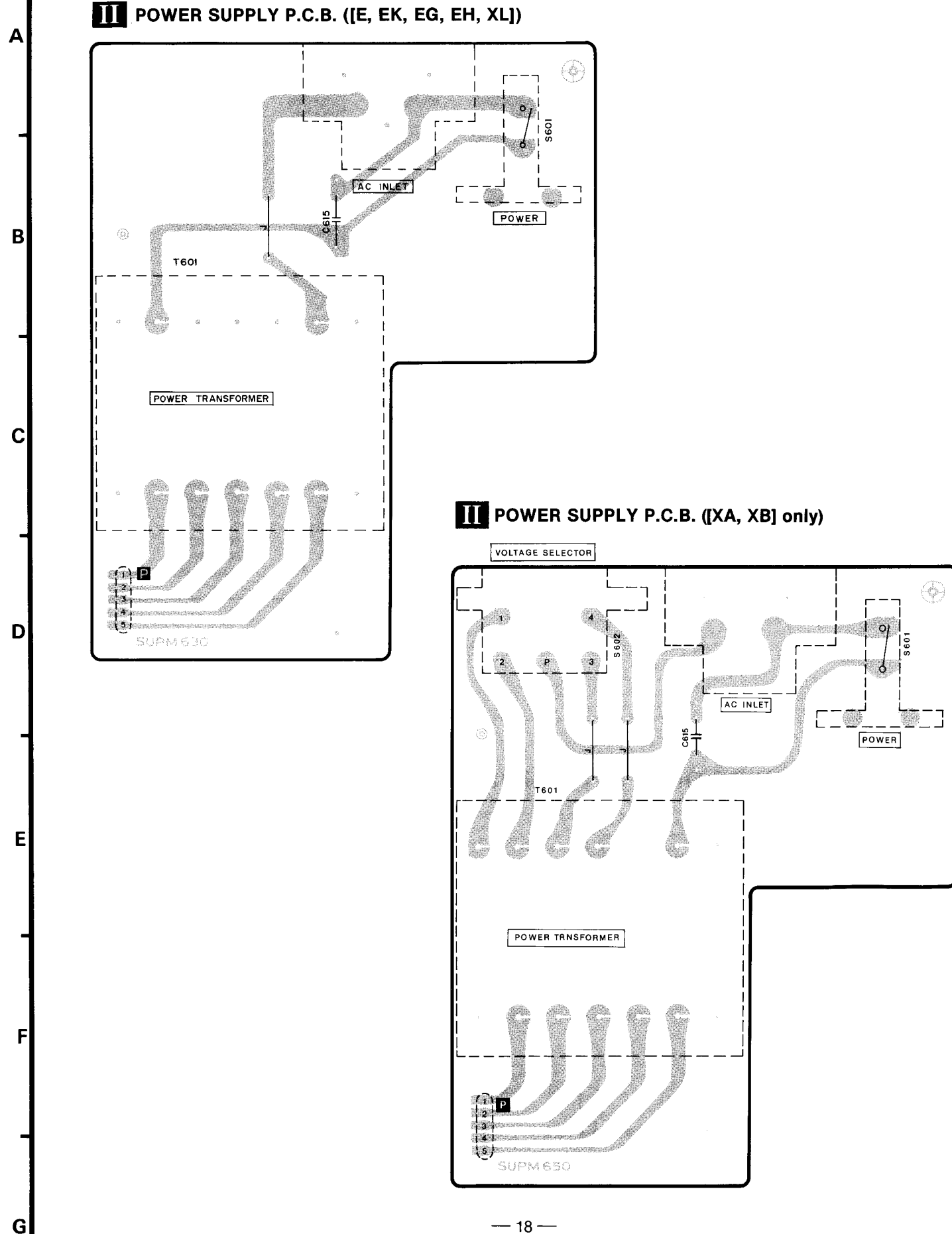
TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

 <p>NO. 1</p>	<table><tr><td>BA6146</td><td>16 Pin</td></tr><tr><td>μPC1297CA</td><td>18 Pin</td></tr><tr><td>TEA0665</td><td>28 Pin</td></tr><tr><td>LM6402G2062</td><td>42 Pin</td></tr></table>	BA6146	16 Pin	μPC1297CA	18 Pin	TEA0665	28 Pin	LM6402G2062	42 Pin	 <p>NO. 1</p>	<table><tr><td>BA15218N</td><td>8 Pin</td></tr><tr><td>AN6557F</td><td>9 Pin</td></tr><tr><td>BA6218</td><td>9 Pin</td></tr><tr><td>MN6634</td><td>9 Pin</td></tr></table>	BA15218N	8 Pin	AN6557F	9 Pin	BA6218	9 Pin	MN6634	9 Pin	 <p>E C B</p>	<table><tr><td>2SA1115E</td><td>2SC2603EFG</td></tr><tr><td>2SD1468R</td><td>2SC1740SQ</td></tr><tr><td>2SA933SQR</td><td>2SD1330R</td></tr></table>	2SA1115E	2SC2603EFG	2SD1468R	2SC1740SQ	2SA933SQR	2SD1330R
BA6146	16 Pin																										
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<p>2SB1237TAQR 2SD1858R</p>	<p>2SB1185DEF</p>  <p>B C E</p>	<p>DTC114ESTP, DTC144ESTP</p>  <p>E C B</p>  <p>C B E</p>	<p>DTA114ES</p>  <p>E C B</p>  <p>C B E</p>	<p>2SD471</p>  <p>E C B</p>																							
<p>2SC1846-R</p>  <p>E C B</p>	<p>SVD1SR35200A 1SS133</p>  <p>Anode Cathode Ca A</p>	<p>SLV31MC3 (Green) SLV31VC3 (Red)</p>  <p>Anode Cathode A Ca</p>	<p>MTZ4R7B MTZ5R6B MTZ6R8B MTZ11BT77 MTZ6R2B</p>  <p>Anode Cathode Ca A</p>	<p>SVGLB74MG3HL (Green) SVGLB74VR3HL (Red)</p>  <p>Anode Cathode Ca A</p>																							

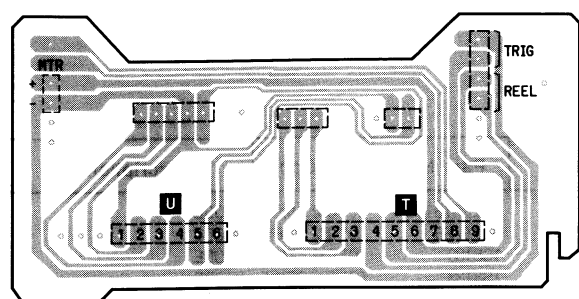
■ WIRING CONNECTION DIAGRAM



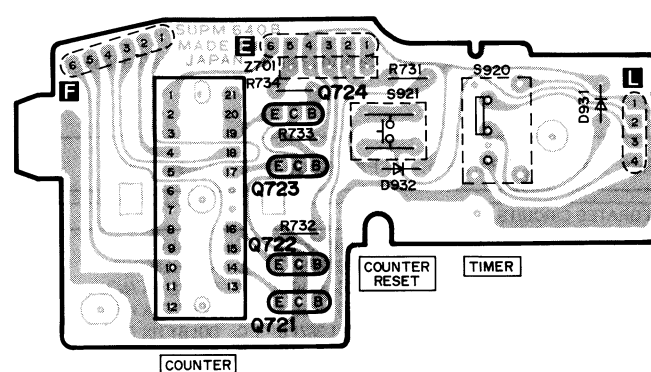
■ PRINTED CIRCUIT BOARDS



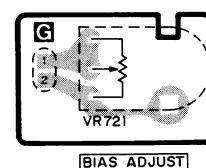
VIII MECHANISM P.C.B.



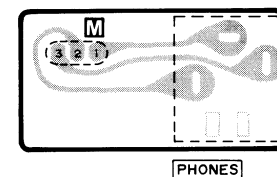
IV TIMER/TAPE COUNTER P.C.B.



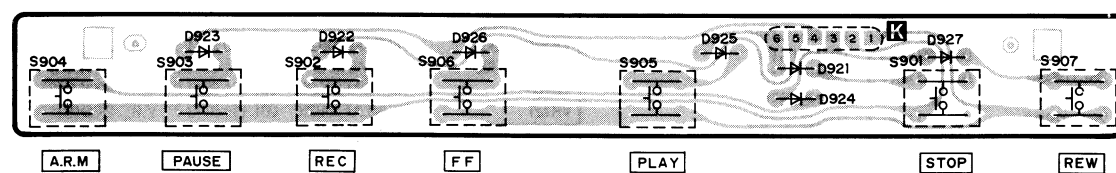
V BIAS ADJUST P.C.B.



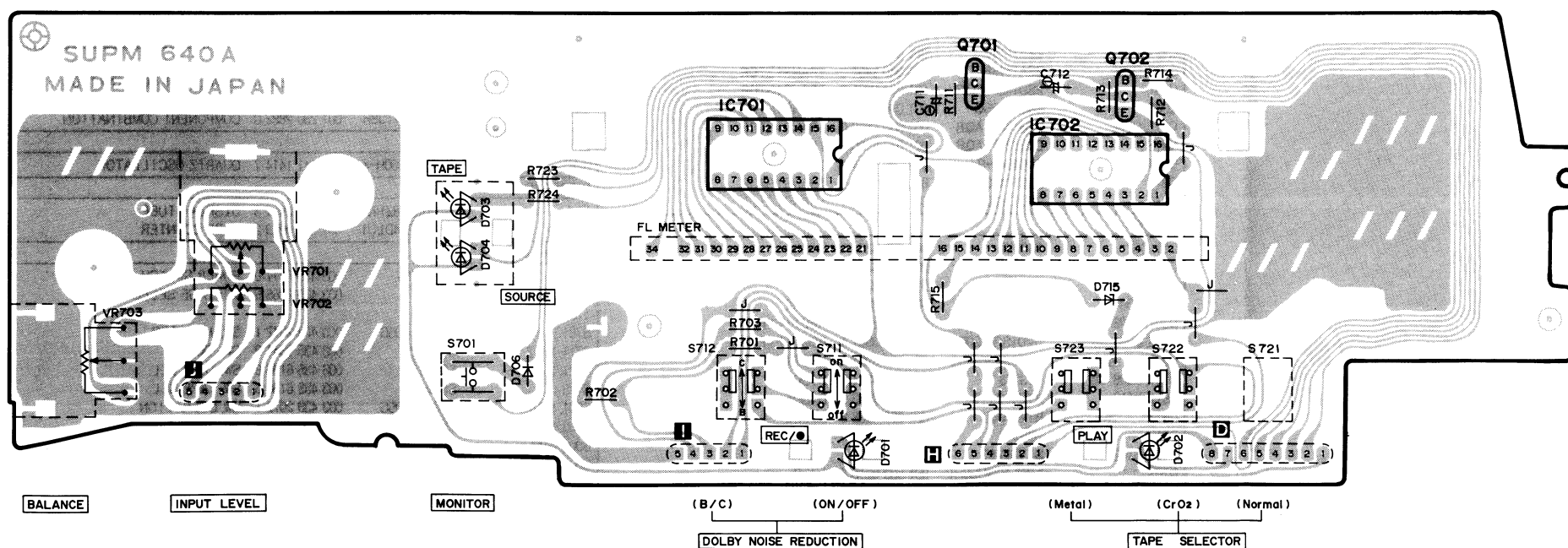
III HEADPHONES JACK P.C.B.



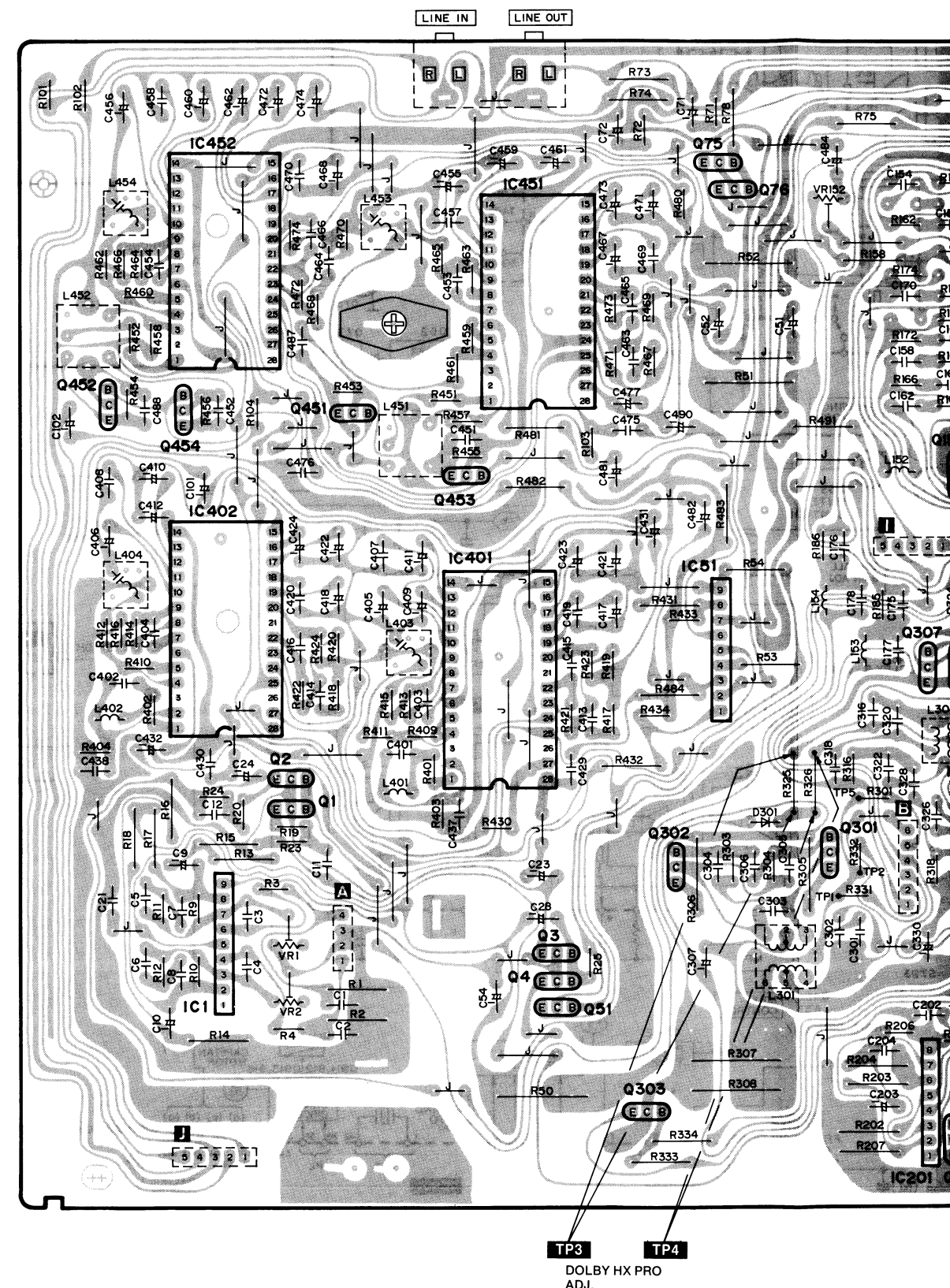
VI OPERATION SWITCH P.C.B.



VII FL METER P.C.B.

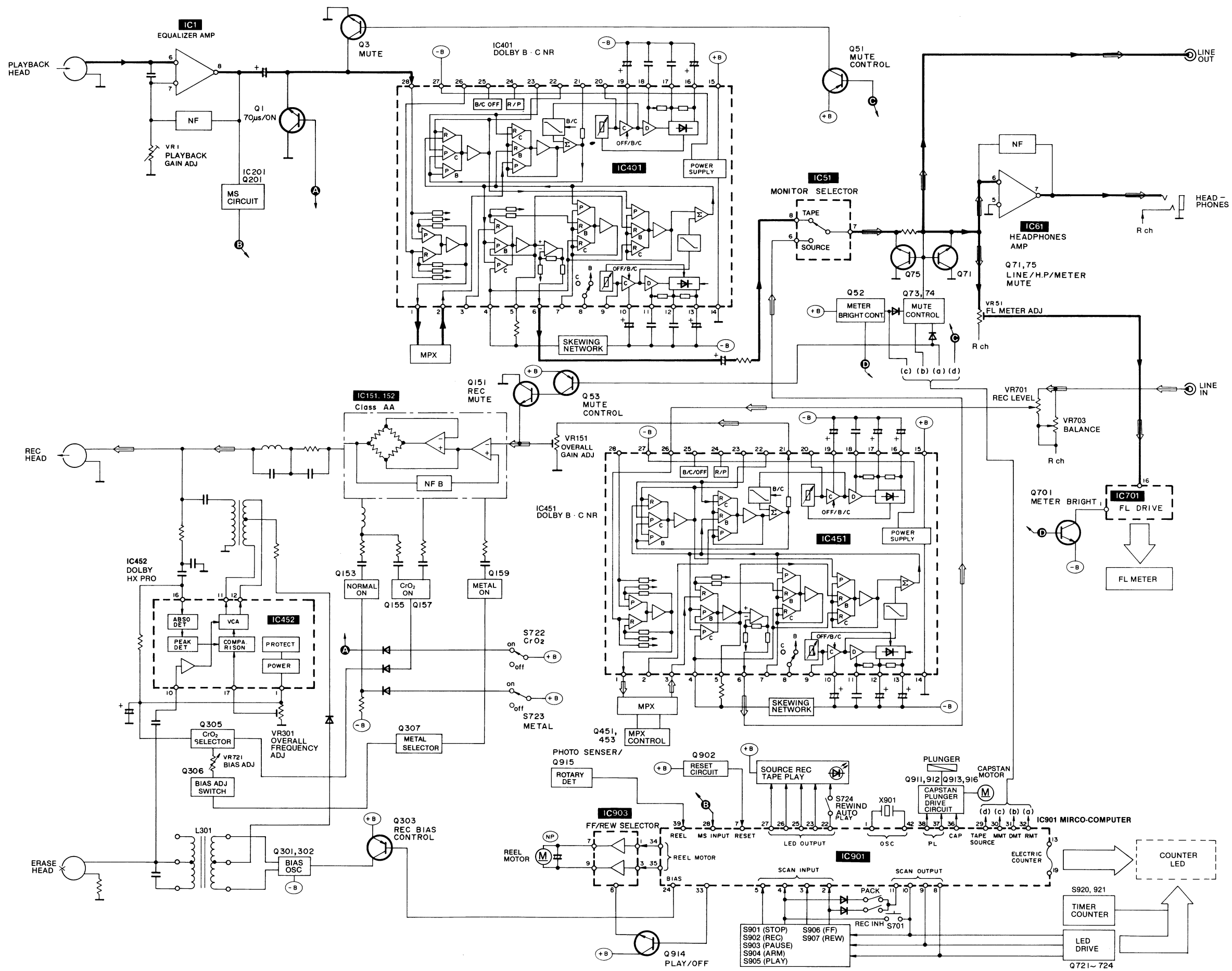


I MAIN P.C.B.



— 21 —

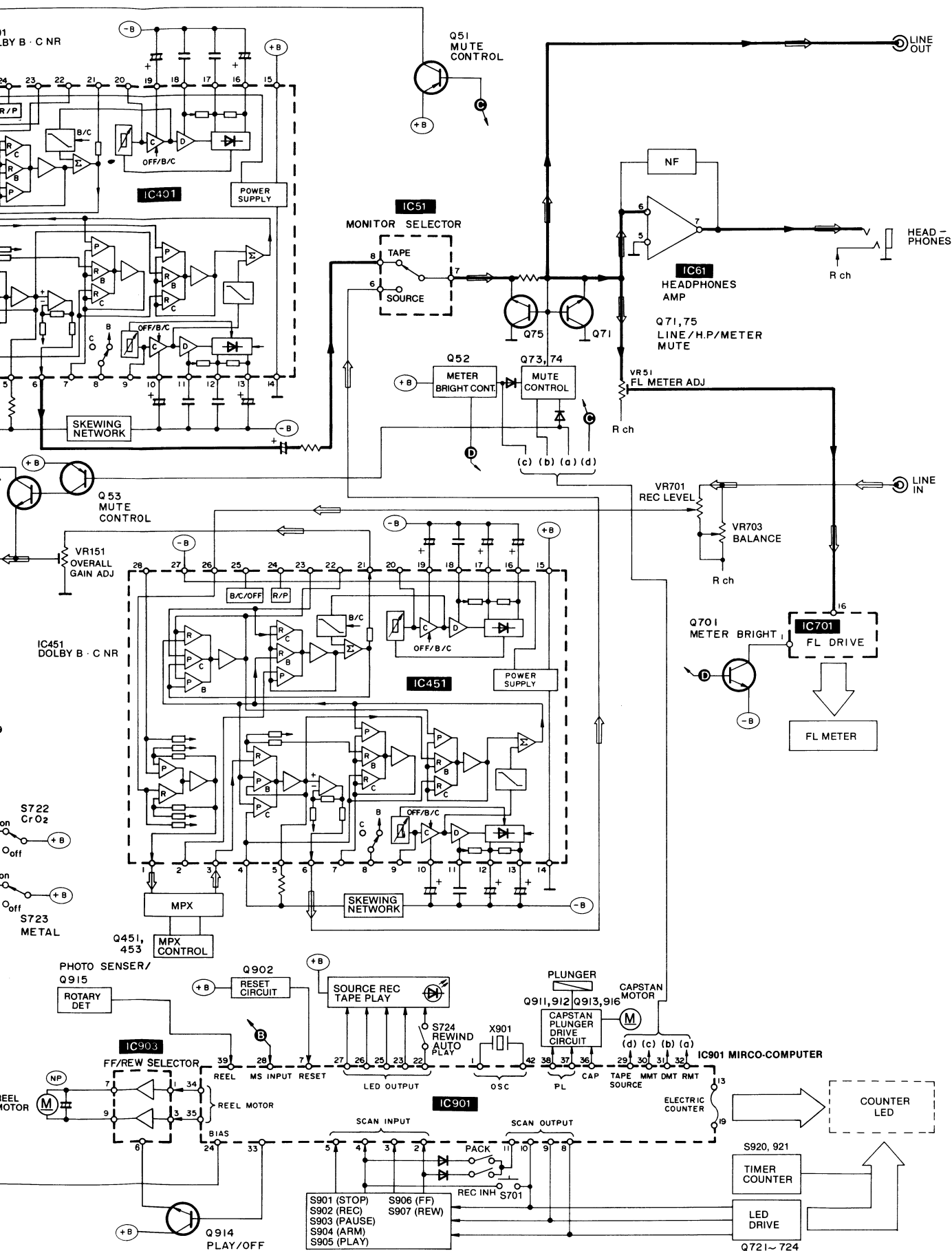
■ BLOCK DIAGRAM



REPLACE

Notes: * Important safety components
Characteristics important for these components
parts.
* Bracketed in the area.
Parts without

Ref. No.	Pa
INTEGRATED CIRCUITS	
IC1	AN655
IC51	MN663
IC61, IC151	BA152
IC152, IC201	BA151
IC301	UPC121
IC401, IC402	TEA08
IC451, IC452	TEA08
IC701, IC702	BA614
IC901	LM640
IC903	BA621
TRANSISTORS	
Q1, Q2	2SC17
Q3, Q4	2SD14
Q51, Q52	DTA11
Q53	2SA93
Q71, Q72	2SC17
Q73	2SA93
Q74	DTC11
Q75, Q76	2SC17
Q151, Q152	2SD14
Q153, Q154	2SA93
Q155, Q156	2SC17
Q157, Q158	2SC17
Q159, Q160	2SC17
Q201	2SC17
Q301, Q302	2SC26
Q303	2SB12
Q305	DTC11
Q306	2SC17
Q307	DTC11
Q451, Q452	2SA93
Q453, Q454	2SA93
Q601	2SD17
Q602	2SB11
Q603	2SD47
Q701, Q702	2SD14
Q721, Q722	2SA11
Q723, Q724	2SA11
Q901	2SD18
Q902	2SC17
Q911, Q912	2SB12
Q913	2SB12
Q914	2SC18
Q915	2SC17
Q916	2SD17
DIODES	
D51, D52	1SS13
D71, D151	1SS13
D152, D155	1SS13
D201, D301	1SS13
D601, D602 Δ	SVD1S
D603, D604 Δ	SVD1S
D605 Δ	SVD1S
D607, D608 Δ	1SS13
D611, D612 Δ	MTZ11
D613 Δ	MTZ6F
D615	1SS13
D701, D702	SLV31
D703	SVGL8
D704	SVGL8
D706	1SS13



REPLACEMENT PARTS LIST

Notes: * Important safety notice:

Components identified by Δ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

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Parts without these indications can be used for all areas.

Ref. No.	Part No.	Part Code	Description	Ref. No.	Part No.	Part Code	Description
INTEGRATED CIRCUITS				D715	MTZ4R7BT77	001 032 9439 1	DIODE
IC1	AN6557F	001 060 7688 6	I.C., EQUALIZER	D901 Δ	MTZ5R6B	001 032 9506 7	DIODE
IC51	MN6634	001 061 0884 7	I.C., NR SELECTOR	D902, D909	1SS133	001 032 3324 5	DIODE
IC61, IC151	BA15218N	001 061 5316 4	I.C., CLASS AA AMP.	D910	1SS133	001 032 3324 5	DIODE
IC152, IC201	BA15218N	001 061 5316 4	I.C., CLASS AA AMP.	D911 Δ	MTZ5R6B	001 032 9506 7	DIODE
IC301	UPC1297CA	001 061 3671 6	I.C., DOLBY HX PRO	D912, D913	1SS133	001 032 3324 5	DIODE
IC401, IC402	TEA0665	001 060 7933 2	I.C., DOLBY B, C NR	D915	1SS133	001 032 3324 5	DIODE
IC451, IC452	TEA0665	001 060 7933 2	I.C., DOLBY B, C NR	D917	MTZ8R2B	001 032 4210 0	DIODE
IC701, IC702	BA6146	001 060 8268 8	I.C., FL DRIVE	D918 Δ	SVD1SR35200A	001 032 3951 4	RECTIFIER
IC901	LM6405G-2104	001 061 5238 1	I.C., MICROCOMPUTER	D921, D922	1SS133	001 032 3324 5	DIODE
IC903	BA6218	001 061 1421 0	I.C., MOTOR DRIVE	D923, D924	1SS133	001 032 3324 5	DIODE
TRANSISTORS				D925, D926	1SS133	001 032 3324 5	DIODE
Q1, Q2	2SC1740SQ	001 030 4871 9	TRANSISTOR	D927, D931	1SS133	001 032 3324 5	DIODE
Q3, Q4	2SD1450R	001 030 4366 1	TRANSISTOR	D932	1SS133	001 032 3324 5	DIODE
Q51, Q52	DTA114ESTP	001 030 5275 9	TRANSISTOR	VARIABLE RESISTORS			
Q53	2SA933SQ	001 030 5081 7	TRANSISTOR	VR1, VR2	QVNB3A00B331	001 180 1595 5	V.R., 330 Ω (B)
Q71, Q72	2SC1740SQ	001 030 4871 9	TRANSISTOR	VR51, VR52	EVND4AA00B24	001 180 2244 1	V.R., 20K Ω (B)
Q73	2SA933SQ	001 030 5081 7	TRANSISTOR	VR151, VR152	QVNB3A00B103	001 180 1684 5	V.R., 10K Ω (B)
Q74	DTC114ESTP	001 030 5025 5	TRANSISTOR	VR301, VR302	EVND4AA00B24	001 180 2244 1	V.R., 20K Ω (B)
Q75, Q76	2SC1740SQ	001 030 4871 9	TRANSISTOR	VR701, VR702	EWK94AC033A54	001 174 8883 8	V.R., 50K Ω (A)
Q151, Q152	2SD1450R	001 030 4366 1	TRANSISTOR	VR703	EWK94AC033A54	001 174 8883 8	V.R., 50K Ω (A)
Q153, Q154	2SA933SQ	001 030 5081 7	TRANSISTOR	VR721	EVJMLAF20B23	001 174 9173 7	V.R., 2K Ω (B)
Q155, Q156	2SC1740SQ	001 030 4871 9	TRANSISTOR	COILS AND TRANSFORMERS			
Q157, Q158	2SC1740SQ	001 030 4871 9	TRANSISTOR	L151, L152	SLQX272-1YT	001 211 0649 2	CHOKE COIL
Q159, Q160	2SC1740SQ	001 030 4871 9	TRANSISTOR	L153, L154	SLQX303-1K	001 211 1756 6	CHOKE COIL
Q201	2SC1740SQ	001 030 4871 9	TRANSISTOR	L301	QLB0202	001 210 9090 8	COIL
Q301, Q302	2SC2603EFG	001 030 4301 8	TRANSISTOR	L303, L304	SLQ9B1-K	001 211 3508 2	OSCILLATOR COIL
Q303	2SB1237TAQR	001 030 6929 0	TRANSISTOR	L401, L402	SLQX272-1YT	001 211 0649 2	CHOKE COIL
Q305	DTC144A	001 030 2708 7	TRANSISTOR	L403, L404	SLM1B8-K	001 211 2731 1	MPX COIL
Q306	2SC1740SQ	001 030 4871 9	TRANSISTOR	L451, L452	QLB40048	001 210 7275 9	COIL
Q307	DTC114ESTP	001 030 5025 5	TRANSISTOR	L453, L454	SLM1B8-K	001 211 2731 1	MPX COIL
Q451, Q452	2SA933SQ	001 030 5081 7	TRANSISTOR	T601 Δ	SLT5L277-W	001 202 9018 2	POWER TRANSFORMER
Q453, Q454	2SA933SQ	001 030 5081 7	TRANSISTOR	(E, EG, EH)			
Q601	2SD1762DE	001 030 6930 7	TRANSISTOR	T601 Δ	SLT5L278-W	001 202 9019 1	POWER TRANSFORMER
Q602	2SB1185DEF	001 030 5691 7	TRANSISTOR	(EK, XL)			
Q603	2SD471	001 030 1730 3	TRANSISTOR	T601 Δ	SLT5L283-W	001 202 9020 8	POWER TRANSFORMER
Q701, Q702	2SD1468R	001 030 2894 0	TRANSISTOR	(XA, XB)			
Q721, Q722	2SA1115E	001 030 2451 3	TRANSISTOR	COMPONENT COMBINATIONS			
Q723, Q724	2SA1115E	001 030 2451 3	TRANSISTOR	Z701	EXBF5E103J8R	001 230 2886 6	COMPONENT COMBINATION
Q901	2SD1858TAQR	001 030 6931 6	TRANSISTOR	Z902	EXBF5E472J8R	001 230 2223 9	COMPONENT COMBINATION
Q902	2SC1740SQ	001 030 4871 9	TRANSISTOR	Z903	EXBF8E471J8R	001 230 2882 0	COMPONENT COMBINATION
Q911, Q912	2SB1237TAQR	001 030 6929 0	TRANSISTOR	OSCILLATORS			
Q913	2SB1237TAQR	001 030 6929 0	TRANSISTOR	X901	SVFKBR800H+K	001 241 1414 7	QUARTZ OSCILLATOR
Q914	2SC1846-R	001 030 1134 7	TRANSISTOR	DISPLAYS			
Q915	2SC1740SQ	001 030 4871 9	TRANSISTOR	FL1	SADBG368ZRK	001 001 0517 3	DISPLAY TUBE
Q916	2SD1762DE	001 030 6930 7	TRANSISTOR	SVG1	SVGLC204DLU1	001 033 0219 2	TAPE COUNTER
DIODES				SWITCHES			
D51, D52	1SS133	001 032 3324 5	DIODE	S601 Δ	ESB8249V	003 435 5877 0	POWER SWITCH
D71, D151	1SS133	001 032 3324 5	DIODE	S602 Δ	SSR227	003 430 2365 6	VOLTAGE SELECTOR
D152, D155	1SS133	001 032 3324 5	DIODE	(XA, XB)			
D201, D301	1SS133	001 032 3324 5	DIODE	S701	EVQAC05G	003 439 2072 1	SW, MONITOR
D601, D602 Δ	SVD1SR35200A	001 032 3951 4	RECTIFIER	S711, S712	SSH2121	003 435 5841 2	SW, DOLBY
D603, D604 Δ	SVD1SR35200A	001 032 3951 4	RECTIFIER	S721, S722	SSH3707	003 435 6136 6	SW, TAPE SEL.
D605 Δ	SVD1SR35200A	001 032 3951 4	RECTIFIER	S723	SSH3707	003 435 6136 6	SW, TAPE SEL.
D607, D608 Δ	1SS133	001 032 3324 5	DIODE	S901, S902	EVQAC05G	003 439 2072 1	SW, OPERATION
D611, D612	MTZ11BT77	001 032 7873 5	DIODE	S903, S904	EVQAC05G	003 439 2072 1	SW, OPERATION
D613 Δ	MTZ6R8B	001 032 4068 8	DIODE	S905, S906	EVQAC05G	003 439 2072 1	SW, OPERATION
D615	1SS133	001 032 3324 5	DIODE	S907	EVQAC05G	003 439 2072 1	SW, OPERATION
D701, D702	SLV31VC3	001 032 4525 4	L.E.D	S920	QSS1306	003 431 2415 4	SW, TIMER
D703	SVGLB74HG3HL	001 033 0218 3	L.E.D	S921	EVQAC05G	003 439 2072 1	SW, COUNTER RESET
D704	SVGLB74VR3HL	001 032 9300 9	L.E.D	S1001, S1002	SMQA1058	003 435 6131 1	SW, PACK/REC INH.
D706	1SS133	001 032 3324 5	DIODE				

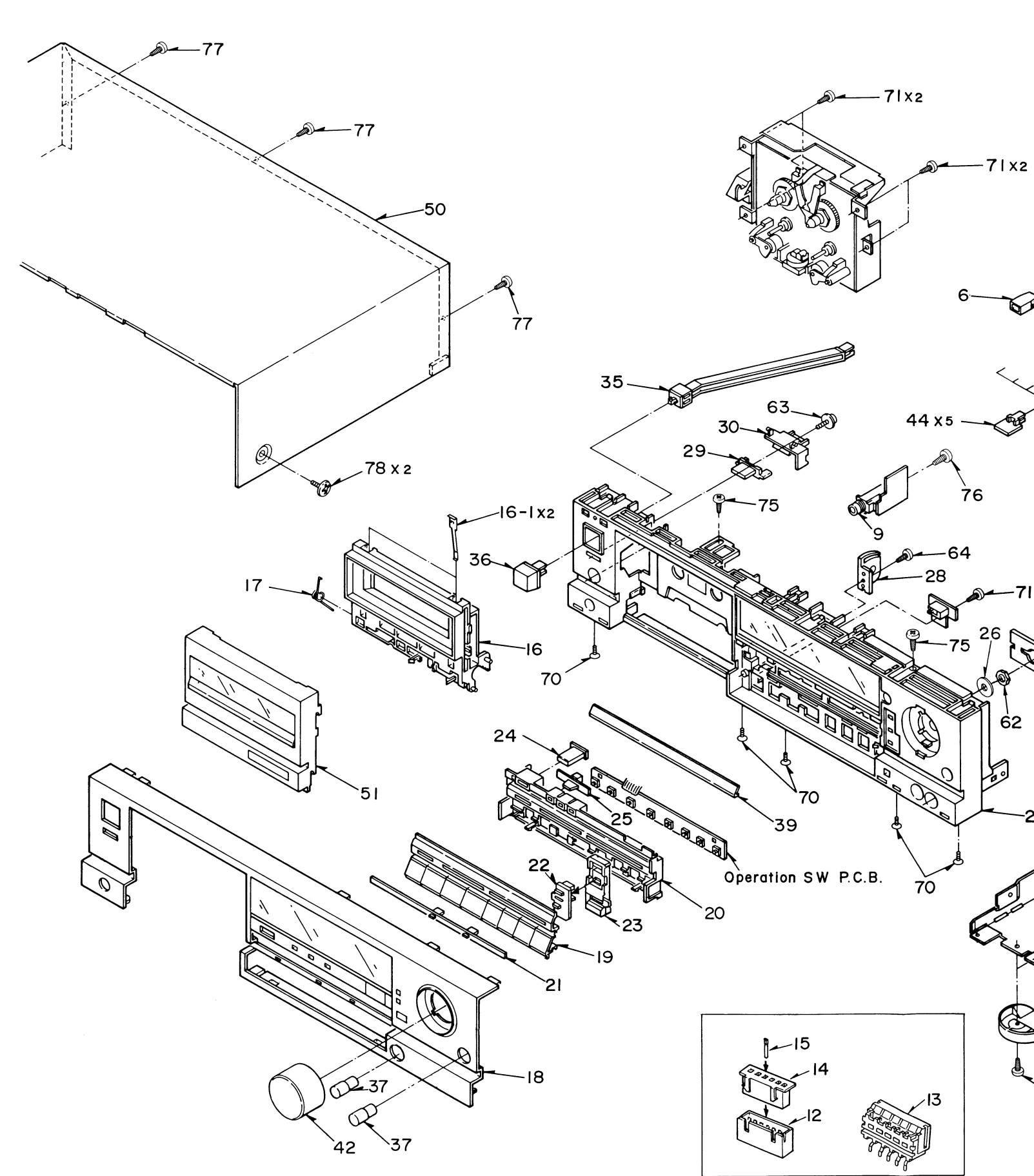
REPLACEMENT PARTS LIST

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Ref. No.	Part No.	Part Code	Description	Ref. No.	Part No.	Part Code	Description
CABINET AND CHASSIS				29	Ⓚ	SBCM50ZK0A	016 702 6899 9 BUTTON, EJECT
1 Δ	SJSD16	003 400 7436 6	AC INLET	30		SMQM30016	016 718 3366 9 LEVER
(XL)				35		SUBM14	016 712 0347 4 ROD
1 Δ	SJS9236	003 403 4660 7	AC INLET	36	Ⓢ	SBC666	016 702 5545 6 BUTTON, POWER
(E, EG, EK, EH)				36	Ⓚ	SBC666-5	016 702 6679 9 BUTTON, POWER
(XA, XB)				37	Ⓢ	SBDM10MA0A	016 700 1997 8 KNOB
2	SMX897	016 600 0483 0	SHIELD COVER	37	Ⓚ	SBDM10ZK0A	016 700 1952 1 KNOB
3	SMNM11	016 632 1852 3	BRACKET	39		SGXM46	016 846 3664 7 ORNAMENT
4	SHRM9022	016 652 0828 5	COUNTER HOLDER	40		SGPM10ZF1A	016 840 7713 9 CHASSIS
5	SHRM9021	016 652 0827 6	METER HOLDER	(E)			
6	SMPSB905-KE		L.E.D. BLOCK	40		SGPM10ZF2B	016 840 7714 8 CHASSIS
7	SHRM9023	016 652 0829 4	L.E.D. HOLDER	(XA, XB)			
8	SMNM14	016 632 1916 4	BRACKET	40		SGPSB705-KE	016 840 7720 0 CHASSIS
9	QJA0455ZC	003 400 5218 2	HEADPHONES JACK	(EG, EH)			
11	SJF3057N	003 410 3829 3	TERMINAL BOARD	40		SGPSB705-KK	016 840 7719 3 CHASSIS
12	SJT3415	003 403 3909 5	CONNECTOR(4-P)	(EK)			
12	SJT3611	003 410 6000 8	CONNECTOR(6-P)	40		SGPSB705-KX	016 840 7721 9 CHASSIS
13	SJT30243-V	003 410 6222 6	CONNECTOR(2-P)	(XL)			
13	SJT30340LX-V	003 410 6075 9	CONNECTOR(3-P)	41		SKLD5	016 828 0321 1 INSULATOR
13	SJT30440LX-V	003 410 6076 8	CONNECTOR(4-P)	42	Ⓚ	SYTM10ZC0A	016 700 1989 8 DIAL, REC LEVEL
13	SJT30540LX-V	003 410 5996 1	CONNECTOR(5-P)	42	Ⓢ	SYTM10ZS0A	016 700 1990 5 DIAL, REC LEVEL
13	SJT30640LX-V	003 410 6149 8	CONNECTOR(6-P)	43		SMNM10-1	016 632 1915 5 COVER
13	SJT30840LX-V	003 410 5998 9	CONNECTOR(8-P)	44	Ⓢ	SBCM30MA0A	016 702 7102 1 BUTTON
14	SJS5421	003 400 1643 5	CONNECTOR(4-P)	44	Ⓚ	SBCM30ZK0A	016 702 6901 2 BUTTON
14	SJS5629	003 400 5917 2	CONNECTOR(6-P)	45		SMNM15	016 632 1917 3 BRACKET
15	SJT783	003 410 6001 7	CONTACT	(XA, XB)			
16	SGXSB80R-KAN	016 846 3666 5	CASSETTE HOLDER	50	Ⓚ	SKC1850K39	016 800 2510 2 CABINET
16-1	QBP2006A	015 727 0706 8	SPRING	50	Ⓢ	SKC1850S38	016 800 2608 3 CABINET
17	SUSM12	016 726 0913 0	SPRING	50	Ⓚ	SYKM37	016 820 0608 9 CASSETTE LID
18	Ⓚ	SGWSB705-KE	016 840 7716 6 FRONT PANEL	51	Ⓢ	SYKM42	016 820 0609 8 CASSETTE LID
18	Ⓢ	SGWSB705-SE	016 840 7715 7 FRONT PANEL	SCREWS, WASHERS & NUTS			
19	Ⓚ	SBCM90	016 702 7072 0 BUTTON, OPERATION	61		XNS8FZ	005 507 0573 8 NUT
19	Ⓢ	SBCM90-2	016 702 7071 1 BUTTON, OPERATION	62		XNS7	005 507 1202 8 NUT
20	Ⓢ	SHRSB705-SE	016 652 0877 6 BUTTON GUIDE	63		SFXGQ06N01	005 500 4983 3 SCREW
20	Ⓚ	SHRSB905-KM	016 652 0876 7 BUTTON GUIDE	64		XTV3+10BFN	005 501 0818 6 SCREW
21		SGUM31ZT1A	016 842 1651 0 INDICATOR	67		XTV3+6FR	005 501 1321 2 SCREW
22		SGUM32ZT0A	016 842 1652 9 INDICATOR	68		XTB3+8JFZ	005 501 0138 3 SCREW
23	Ⓢ	SBCM80MA0A	016 702 7104 9 BUTTON, MONITOR	69		XTB3+12JFZ	005 501 2078 0 SCREW
23	Ⓚ	SBCM80ZK0A	016 702 7105 8 BUTTON, MONITOR	(XA, XB)			
24	Ⓢ	SBCM20MA0A	016 702 7103 0 BUTTON, RESET	70		XTS3+8JFZ	005 501 2270 2 SCREW
24	Ⓚ	SBCM20ZK0A	016 702 6902 1 BUTTON, RESET	71		XTV3+10JR	005 501 1142 3 SCREW
25	Ⓢ	SBDM20MA0A	016 700 1998 7 KNOB, TIMER	72		XTBS3+8JFZ1	005 501 2523 0 SCREW
25	Ⓚ	SBDM20ZK0A	016 700 1950 3 KNOB, TIMER	75		XTB3+6JR	005 501 4755 8 SCREW
26		SHMM60H70	016 643 1084 8 SPACER	76		SFXGQ06N01	005 500 4983 3 SCREW
27	Ⓚ	SGYSB705-KE	016 840 7718 4 FRONT GRILLE	77		XTB3+8JFZ	005 501 0138 3 SCREW
27	Ⓢ	SGYSB705-SE	016 840 7717 5 FRONT GRILLE	78	Ⓢ	SNE2118	005 500 5011 2 SCREW
28		QYF0627A	015 641 0945 0 DAMPER GEAR	78	Ⓚ	SNE2118-1	005 500 5004 1 SCREW
29	Ⓢ	SBCM50MA0A	016 702 7101 2 BUTTON, EJECT	79		XTS3+12JR	SCREW

Ref. No.	Part No.	Part Code	Description	Ref. No.	Part No.	Part Code	Description
PACKINGS				(E, EG, EH)			
P1 Ⓚ	SPGM100	016 971 5040 5	CARTON BOX	A2 Δ	SFDAC05G02	003 490 2613 3	POWER CORD
(XA, XB)				(EK)			
P1 Ⓢ	SPGM102	016 971 5037 0	CARTON BOX	A2 Δ	SJA168-1	003 490 4122 9	POWER CORD
(XA, XB)				(XA)			
P1 Ⓢ	SPGM103	016 971 5038 9	CARTON BOX	A2 Δ	SJA173	003 490 4161 2	POWER CORD
(E, EG, EK, EH)				(XL)			
(XL)				A2 Δ	SJA183	003 490 4873 7	POWER CORD
P1 Ⓚ	SPGM92	016 971 5039 8	CARTON BOX	(XB)			
(E, EG, EK, EH)				A3 Δ	SJP9215	003 402 1437 9	AC PLUG ADAPTOR
(XL)				(XA, XB)			
P2	SPSM17	016 977 3179 5	PAD	A4	SQFM65-2	016 983 5394 6	INSTRUCTION MANUAL
P3	SPSM18	016 977 3178 6	PAD	(E, EH, XA, EK)			
P4	XZB40X60A02	016 978 0254 8	PROTECTION COVER	(XL)			
ACCESSORIES				A4	SQFM64	016 983 5196 0	INSTRUCTION MANUAL
A1	SJP2264	003 492 5035 3	OUTPUT CORD	(EG)			
A2 Δ	SFDAC05E03	003 490 4809 5	POWER CORD	A4	SQFM73-2	016 983 5390 0	INSTRUCTION MANUAL
				(XB)			

CABINET PARTS LOCATION



■ CABINET PARTS LOCATION

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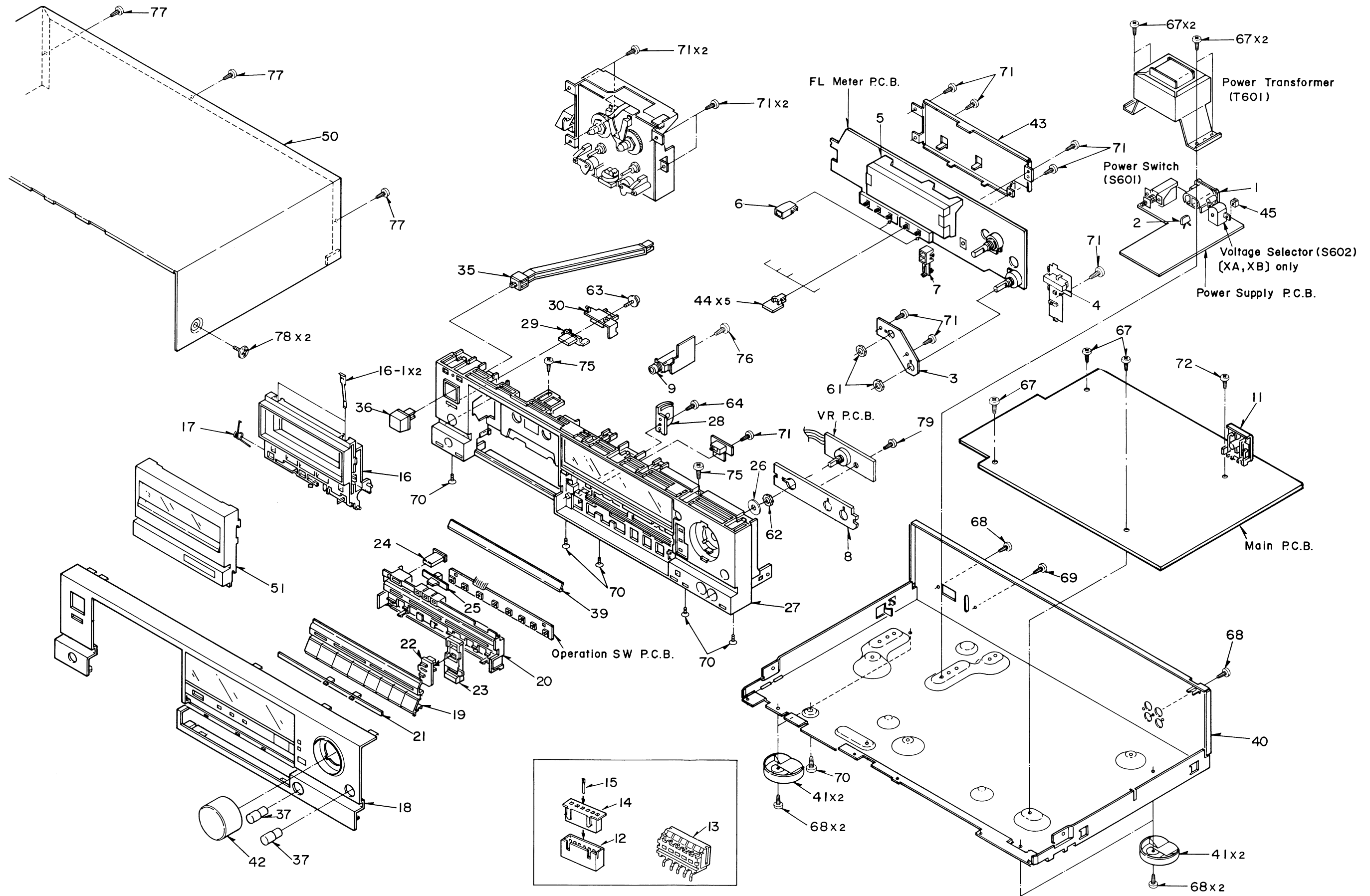
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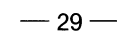
ADAPTOR

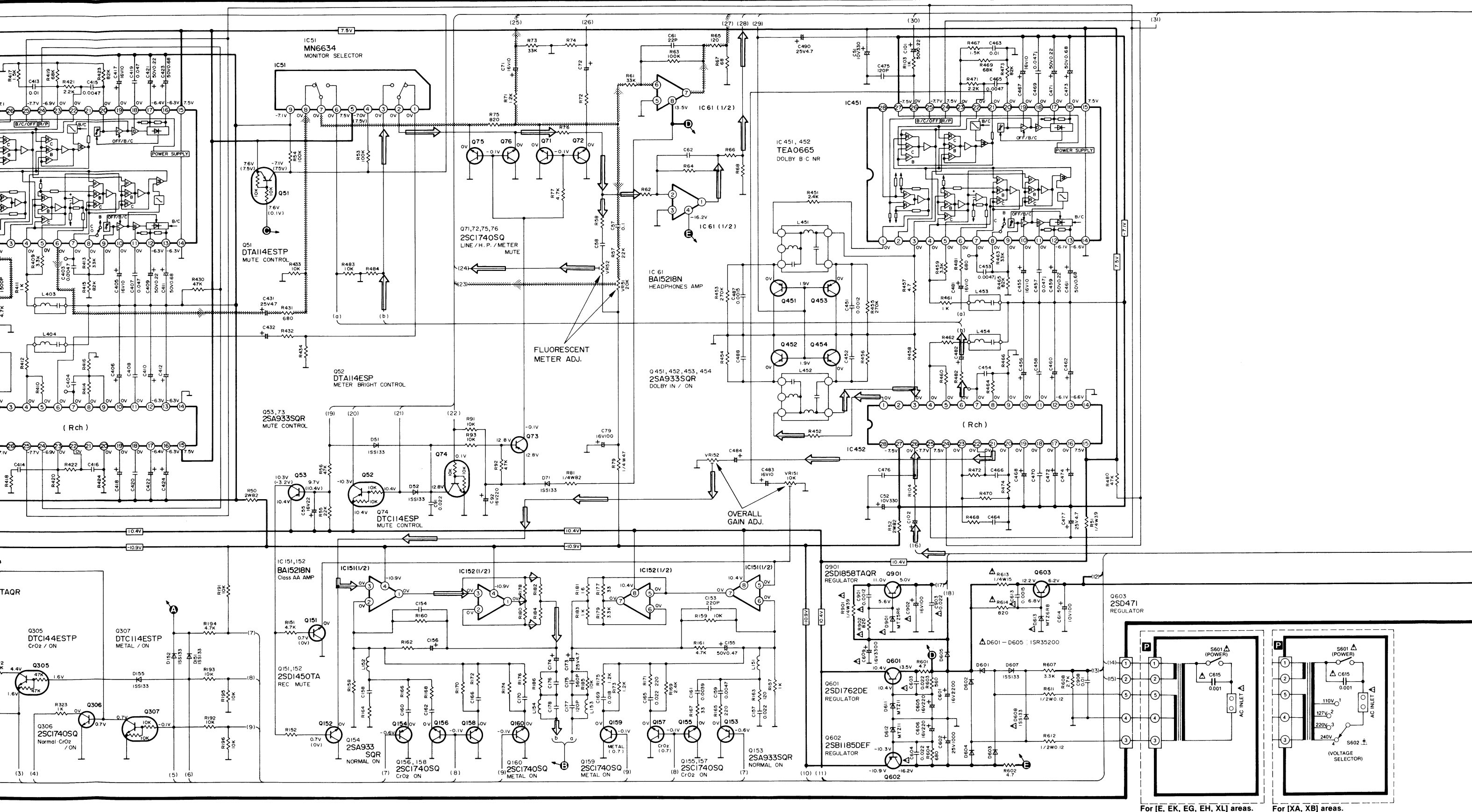
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CTION MANUAL

CTION MANUAL







For [E, EK, EG, EH, XL] areas.
II POWER SUPPLY CIRCUIT

For [XA, XB] areas.



SCHEMATIC DIAGRAM

(This schematic diagram may be modified at any time with the development of new technology.)

Notes:

- **S601** : Power switch in "off" position.
- **S602** : Voltage selector in "240V" position ([XA, XB] area only).
- **S701** : Monitor switch.
- **S711** : Dolby NR switch in "off" position.
- **S712** : Dolby NR B/C selector in "B" position.
- **S721** : I/Normal tape selector in "on" position.
- **S722** : II/CrO₂ tape selector in "off" position.
- **S723** : IV/Metal tape selector in "off" position.
- **S901** : Stop switch in "off" position.
- **S902** : Rec. switch in "off" position.
- **S903** : Pause switch in "off" position.
- **S904** : Auto rec. mute in "off" position.
- **S905** : Play switch in "off" position.
- **S906** : FF (MS) switch in "off" position.
- **S907** : Rew (MS) switch in "off" position.
- **S920** : Timer stand-by switch in "rec" position.
- **S921** : Counter reset switch in "off" position.
- **S1001** : Pack switch in "off" position.
- **S1002** : Rec inhibit switch in "off" position.

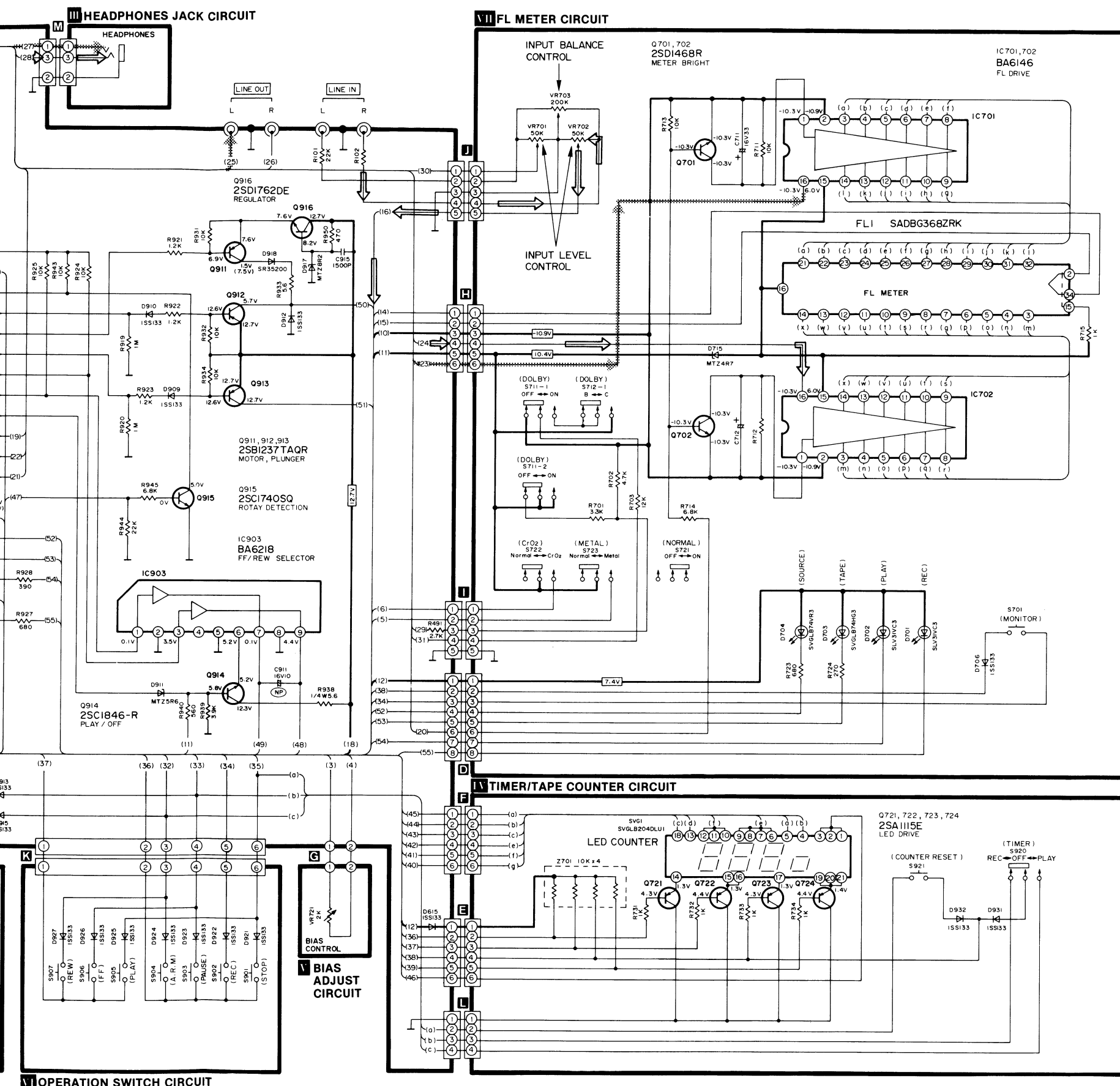
- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise.
1K=1,000 (Ω), 1M=1,000k (Ω)
- Capacity are in micro-farads (μ F) unless specified otherwise.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.
- ()...Voltage values at record mode.
- (\rightarrow) indicates B (bias).
- (\rightarrow) indicates the flow of the playback signal.
- (\rightarrow) indicates the flow of the record signal.
- Important safety notice
Components identified by Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

* Caution!

- IC and LSI are sensitive to static electricity. Secondary trouble can be prevented by taking care during repair.
- * Cover the parts boxes made of plastics with aluminum foil.
- * Ground the soldering iron.
- * Put a conductive mat on the work table.
- * Do not touch the legs of IC or LSI with the fingers directly.

SPECIFICATIONS * Input level control...MAX

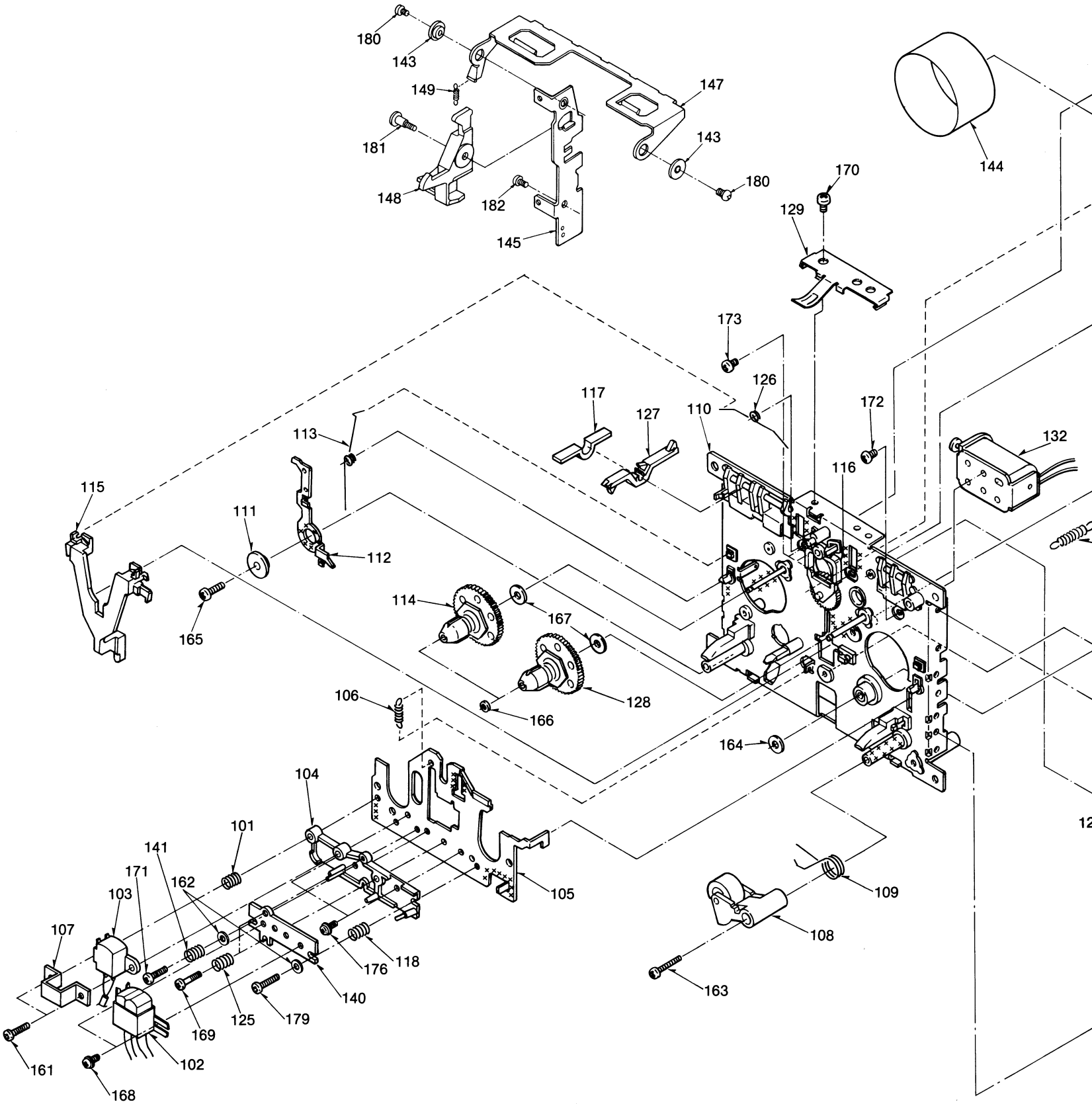
Playback S/N ratio * Test tape...QZZCFM	Greater than 45dB
Overall distortion * Test tape ...QZZCRA for Normal ...QZZCRX for CrO ₂ ...QZZCRZ for Metal	Less than 4%
Overall S/N ratio * Test tape ...QZZCRA	Greater than 43dB (without NAB filter)



REPLACEMENT PARTS LIST

Ref. No.	Part No.	Part Code	Description	Ref. No.	Part No.	Part Code	Description
CASSETTE DECK				137	SMQA1036	002 310 2270 9	DC MOTOR
101	SMQA1001	016 726 0827 7	SPRING	138	SMQA1037	002 310 2271 8	DC MOTOR
102	SJH104	001 270 1869 7	MAGNETIC HEAD	139	SMQA1038	016 752 0126 1	FLAT BELT
103	SJH100	001 270 1699 7	MAGNETIC HEAD	140	SMQA1176	016 630 1859 6	HEAD PLATE
104	SMQA1162	016 643 1068 8	HEAD SPACER	141	SMQA1177	016 726 1013 3	AZIMUTH SPRING (L)
105	SMQA1163	016 630 1857 8	HEAD BASE	142	SMQA1072	016 726 0883 9	SPRING
106	SMQA1004	016 726 0826 8	SPRING	143	SUXM5	016 634 0141 1	SPACER
107	SMQA1039	016 640 0465 8	COVER	144	SMQA1179	016 601 0647 3	SHIELD PLATE
108	SMQA1005	016 740 0114 1	ROLLER	145	SMNM8A	016 632 1914 6	BRACKET
109	SMQA1006	016 726 0825 9	SPRING	146	SMNM9	016 632 1855 0	BRACKET
110	SMQA1165	016 630 1858 7	CHASSIS ASS'Y	147	SMQA1042	016 718 3369 6	LEVER
111	SMQA1009	016 643 0966 7	SPACER	148	SMQM30015A	016 718 3400 4	LEVER, EJECT
112	SMQA1011	016 717 0254 3	ARM	149	QBT1936M	016 726 0914 9	SPRING
113	SMQA1012	016 726 0835 7	SPRING	SCREWS, WASHERS & NUTS			
114	SMQA1013	016 913 0004 5	REEL	161	XSN2*8	005 500 1301 1	SCREW
115	SMQA1015	016 718 3350 7	BRAKE LEVER	162	SMQA1161	016 643 1069 7	WASHER
116	SMQA1061	016 742 0039 5	IDLER PULLEY	163	SMQA1164	016 713 0416 3	SCREW
117	SMQA1166	016 718 3407 7	DET. LEVER	164	SMQA1007	016 862 1041 8	WASHER
118	SMQA1170	016 726 1014 2	AZIMUTH SPRING (R)	165	XTN3*10	005 501 4763 8	SCREW
119	SMQA1021	016 643 0965 8	SPACER	166	SMQA1010	016 765 0056 7	WASHER
120	SMQA1041	001 035 0392 0	PHOTO ELECTRIC TRANSDUCER	167	SMQA1014	016 641 0246 2	WASHER
121	SMQA1022	016 643 0964 9	SPACER	168	SMQA1167	016 713 0418 1	SCREW
122	SJT30243-V	003 410 6222 6	CONNECTOR(2-P)	169	SMQA1168	016 713 0417 2	SCREW
123	SJT30440LX-V	003 410 6076 8	CONNECTOR(4-P)	170	XTN3*4	005 501 4864 4	SCREW
124	SJT30740LX-V	003 410 5990 7	CONNECTOR(7-P)	171	SMQA1169	016 713 0419 0	SCREW
125	SMQA1172	016 726 1012 4	SPRING	172	XYN26+C3	005 503 0738 5	SCREW
126	SMQA1024	016 726 0834 8	SPRING	173	XYN26+C6	005 503 0554 1	SCREW
127	SMQA1025	016 718 3349 0	DET. LEVER	174	XTN26*8	005 501 3998 5	SCREW
128	SMQA1026	016 913 0003 6	REEL	175	SMQA1031	005 513 4185 4	WASHER
129	SMQA1062	016 726 0881 1	SPRING	176	SMQA1175	016 713 0420 7	SCREW
130	SMQA1171	016 717 0280 1	PLAY ARM	177	XTN3*5	005 501 4083 5	SCREW
131	SMQA1029	016 640 0459 6	CAP	178	XTN2*6	005 501 3949 4	SCREW
132	SMQA1070	003 454 0638 6	PLUNGER	179	XSN2*8	005 500 1301 1	SCREW
133	SMQA1173	016 756 0089 9	WHEEL	180	XTV3*6F	005 501 0891 7	SCREW
134	SMQA1174	016 745 0260 7	GEAR	181	SMQA1017	005 500 6211 2	SCREW
135	SMQA1097	016 643 1004 4	SPACER	182	XTN3*5F	005 501 3502 1	SCREW
136	SMQA1068	016 650 5303 9	BRACKET				

MECHANICAL PARTS LOCATION



MECHANICAL PARTS LOCATION

[illegible]